The RUBBER AGE

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RECLAIMED RUBBER STOCKS REDUCED IN QUARTER DESPITE LARGER OUTPUT

Rubber Association Statistics for Third Quarter of 1925 Place Production at 31,909 Tons, Shipments at 29,910 and Inventory at 7,762—Scrap Stocks Large

Inventory of reclaimed rubber stocks has steadily fallen this year, although production has been increased to fill growing demand. According to a recent statistical bulletin of the Rubber Association containing figures compiled from a questionnaire sent to seven reclaimers, 19 manufacturers who also reclaim and 61 other manufacturers, shipments for the third quarter of 1925 were 29,910 long tons, production was 31,909 tons and inventory was 7,762. That inventories have steadily fallen is seen when figures from the first and second quarter are compared. Inventory was 9,238 tons at the end of the first quarter and 8,820 for the second quarter. Production rose from 25,353 tons in the first quarter to 27,523 in the second and shipments increase from 22,922 tons in the first quarter to 23,651 in the second yet jumped to 29,910 in the quarter just ended.

Stocks of Scrap Increased

Inventories of scrap rubber, however, rose from 40,045 tons in the first quarter to 74,809 in the third quarter, although consumption also rose from 32,630 tons in the first quarter to 40,780 in the third quarter. At the end of the third quarter there were 21,752 tons of scrap rubber due on contract, compared with 16,414 in the first quarter.

Manufacturers representing about 75 per cent of the industry reported 91,534 tons of crude rubber consumed in the third quarter, compared with 95,771 in the second quarter and 87,642 in the first. The value of shipments of all products was $309,437,000 in the third quarter, compared with $300,924,000 in the second and $228,256,000 in the first quarter.

Inventory of crude rubber in the United States and afloat for U. S. ports at the end of the third quarter was 33,131 tons on hand and 50,480 tons afloat, compared with 47,770 tons on hand and 48,708 tons afloat in the second quarter and 54,502 tons on hand and 90,709 tons afloat in the first quarter. Crude rubber arrivals were 91,499 tons in the third, 101,554 in the second and 90,709 tons in the first quarter.

Several of the largest reclaimers, unable to keep pace with the demand for their products, are planning additions.

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EXCISE TAX ON ALL TIRES REMOVED BY COMMITTEE

By action of the Ways and Means Committee of the House of Representatives on Nov. 9, the tax on tires and accessories was abolished. This action, together with a cut of two per cent of the five per cent tax on automobiles, will bring the automobile industry a saving of about $70,000,000 if the Bill is eventually passed. The saving to the tire, accessory and parts industries on the basis of last year's figures will be $27,000,000.

The full official text of the excise tax clauses is not yet available. The Bill will be voted upon by a Senate Committee and possibly by a Conference Committee composed of members of both the Senate and the House of Representatives. The final draft will be voted upon by Congress before January, before which time there probably will be many changes made in the clauses dealing with the excise taxes.

Tyer Buys Mechanical

The Tyer Rubber Co., Andover, Mass., recently purchased the equipment and manufacturing rights of the Mechanical Rubber Mfg. Co., which has occupied a part of the Tyer factory for the last few years as a separate corporation. The Mechanical company specialized in rubber covered rolls used in textile, paper and other industries. The business will be operated without interruption by the Tyer Rubber Co.

Decides in du Pont's Favor

The Examiner of Interferences in the U. S. Patent Office recently awarded priority of invention in Patent Interference No. 49,357 to Winfield Scott, assignor to E. I. du Pont de Nemours & Co., Inc. of 13 of the 16 counts claimed. These counts, in effect, cover the use of di-ortho-tolylguanidine as a rubber vulcanization accelerator.

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DEFIANCE TO ENLARGE RECLAIMING FACTORY

The Defiance Rubber Co., Defiance, Ohio, is completing the first step toward the enlargement of their capacity. The new unit consists of a building 66′ x 100′ which will be completed in about ten days time. New machinery will be immediately installed and this new unit will be in production by the 15th of December.

The Defiance Rubber Co., besides producing high grade reclaimed rubbers, also produces hard rubber dust, sheet rubber and other hard rubber products for hard rubber manufacturers. The plant is running twenty-two hours a day and the new unit will operate on the same schedule, enabling the company to immediately increase their output considerably. C. L. Kintner is in charge of the production of this company.

No Receiver for Columbus

The Common Pleas Court recently dismissed an application for the appointment of a receiver for the Columbus Tire & Rubber Co., Columbus, Ohio, as an agreement was reached between William E. Armacost, who instituted the suit, and the company. Business will be continued as usual.

Close Ashland Plant

The Ashland factory of the Mansfield Tire & Rubber Co., Mansfield, Ohio, was recently shut down. It will be reopened January 1 to be operated at full capacity. Mansfield officials maintain that it is more practical to operate the factory in Mansfield on full time than it would be to operate the two factories on a half-time basis. It was stated that the production of the two plants has been 5,500 tires and 10,000 tubes a day. It is planned to increase this production next year to 6,000 tires a day.

E. A. Stone Joins Cambridge

Edwin A. Stone, formerly superintendent of the cutting department for the Firestone-Apsley Rubber Co., Hudson, Mass., has accepted a similar position with the Cambridge Rubber Co., Cambridge, Mass., manufacturers of rubber footwear, rubberized clothing, soles and heels.

Gillette Wins Suit

The Supreme Court recently refused to pass upon the validity of the claim of the Merchants Bank & Trust Co., Winston-Salem, N.C., against the Gillette Rubber Co., Eau Claire, Wis. The suit, which arose out of trade acceptances, was decided against the bank by the Federal Court of western Wisconsin.

Tracey Returns to New York

R. B. Tracey, formerly manager of the New York branch of the Henderson Tire & Rubber Co., Columbus, Ohio, but lately acting as factory representative, has returned to New York City as manager.

CRITICIZES HOOVER'S STAND ON RESTRICTION

(Special to THE RUBBER AGE*)*

The London *Daily Telegraph* has published the following comment on Secretary Hoover's recent speech against restriction:

Mr. Hoover, in his outburst against the Stevenson rubber law, has evidently overlooked the fact that but for its provisions a large number of rubber plantations would have remained uncultivated after the great slump. It is almost unnecessary to recall to Mr. Hoover the fact that the American cotton supplies for export are wholly governed by the domestic needs of the United States and the New York and St. Louis Exchanges, without any special reference to the needs of Lancashire at any particular date. On Feb. 1 next the rubber supply, at 95 per cent, will have returned almost to the normal.

Elect New Officers

At a meeting of the Rubber Trade Association of New York on Nov. 12, the following officers were elected: H. A. Astlett, president; F. Pusinelli, vice-president; R. L. Chipman, treasurer; and J. P. Sullivan, secretary. The new directors to serve three years are W. E. Bruyn, W. H. Stiles, D. D. Halvane and H. F. Tiedeman. E. Stevenson was elected a director to serve until November, 1926.

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Defiance, Ohio

ADVISES MANUFACTURERS TO CARRY LARGE RESERVE STOCKS OF RUBBER

H. Eric Miller, Former President of Rubber Growers' Assn., in Address in London, Forecasts American Consumption for 1925 as 400,000 Tons of 560,000-Ton World Total

H. Eric Miller, chairman of Harrisons & Crosfield and former president of the Rubber Growers' Association, at the recent meeting of his firm in London gave an exhaustive summary of the statistical position in his address. In particular, he warned consumers not to repeat the mistake of neglecting the market when supplies are freely available. The following is a brief summary of Mr. Miller's speech.

"A year ago," declared Mr. Miller, "I indicated the trend of world consumption, but I did not then anticipate that the absorption of crude rubber in 1925 would attain its present dimensions. Rubber price movements during the past two years indicate that manufacturers have not accurately gauged their future requirements. For some years they had been faced with superabundant supplies of crude rubber and they ceased to pay adequate attention to the part which they were called upon to play in order to provide rationally for their growing needs. Under restriction, once the surplus stocks were absorbed, very little foresight was called for to ensure conditions approximating stability at a very moderate price level, instead of which the average daily price during the quarter May/July, 1924, was under 11d. (22 cents) per lb., while today the value is 3s. 11d. (94 cents) per lb.

Restriction Did Not Raise Prices

"Much gratitude has been rightly bestowed on the Stevenson Scheme, but I am sure the originators of it could not and would not claim that the legislation founded on it should be credited with the attainment of the present high price for rubber. A few simple figures will prove this statement.

"If the average daily price of standard sheet had been maintained at just over 1s. 3d. (30 cents) per lb. since the inception of the restrictive legislation, 200,000 tons more rubber might have been exported. Without, however, relying on the foregoing as proof of my statement, I will go back only as far as the quarter August/October, 1924. The average daily price in that quarter was 1s. 2.63d. (29.26 cents) per lb. If consumers had seen to it that the price in that quarter averaged just over one-third of a penny per lb. more, and, if in the quarter November, 1924/January, 1925, they had raised the average daily price by a small decimal point of a penny, 50,000 tons more rubber could have been, and certainly would have been, exported from the restriction areas. I leave it to the judgment of anyone who has knowledge of the industry to say whether there would have been any sensational rise in price during 1925 had buyers seen to it that these 50,000 tons additional were forthcoming.

"The strength of the present position prompts me to search for causes which may bring about a reaction, but it is not easy to conjure them up. It is well to be prepared, however, for some natural reaction in 1926, but, when supplies become available in excess of immediate needs, the wise manufacturer will increase his holding of crude rubber. The average rate of progressive increase in consumption of crude rubber during the 14 years preceding 1924 was 13 per cent per annum. Bringing the 1925 probable absorption into my table and correcting the 1924 estimated absorption, we calculate that the true consumption figure for 1924 shows an increase of 13½ per cent over 1923, so that the average of 13 per cent annual increase now holds good over the past 15 years.

"Crude rubber absorption during the current year will be about 560,000 tons, of which 400,000 tons will be used in the

(Concluded on Page 110)

Supply and Demand
vs.
Quality

The law of supply and demand has seldom operated with more force than it does today in the Rubber Industry.

The demand for Reclaimed Rubber has grown to the point of straining production capacity.

The most rigid standards for quality and uniformity are needed to resist the tendency to substitute volume for value.

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"42 *Years Serving the Industry Solely as Reclaimers.*"

ADVISES MANUFACTURERS TO CARRY LARGE STOCKS

(Concluded from Page 109)

United States and 160,000 tons in other countries.

"The absorption of crude rubber by the rest of the world during 1925 will be about 25,000 tons more than in 1924, the most noteworthy increase being that of Germany, whose absorption has increased from 22,000 tons in 1924 to over 40,000 tons during the current year. In no manufacturing country with the exception of Japan has the absorption decreased, and, as in the case of America, the increased absorption is mainly accounted for by the increasing use of motor transport. At the end of last year it was estimated that 3,700,000 automobiles were in use in countries outside the United States, and by the end of 1925 the total should be over 4,500,000.

Use of Reclaim Will Grow

"During the first seven months of the current year the world's stocks of crude rubber have been reduced by over 60,000 tons, and of this reduction 25,000 tons came from the London stocks, which are now only 5,000 tons. The high prices are undoubtedly stimulating the use of reclaimed rubber, and this will have to be allowed for in estimating future absorption.

"The United States is the only country for which we have data on the use of reclaimed rubber. For practical purposes 3 lbs. of good quality reclaimed rubber is required to replace 1 lb. of crude rubber. Therefore a rise in the percentage of reclaimed may roughly be divided by three in order to gauge its real effect on the situation. In the case of automobile tires, where any reduction in quality cannot ultimately be disguised from the consumer, I imagine that reclaimed will play only a small part, but its use will certainly extend in the case of certain other goods.

"The new rubber available for shipment during 1925 will approximate 500,000 tons dry weight, about 100,000 tons more than last year. Of this increase only a small fraction is wild rubber.

"Dutch native production again shows an increase over the previous year, but the 1925 production probably carries a greater percentage of moisture. Reports of the recent investigations carried out by Dutch officials and British planters in the districts of Djambi, Palembang, and Bandjermassin are now available. Taken in conjunction with the latest export figures, they indicate that, for the present, the native rubber output is reaching its limit, and that little increase can be look for any material increase in the free should be the equivalent of about six years hence. By that time over tapping, inadequate upkeep, and disease will have seriously curtailed the potential output from those trees now in tapping. The much-advertised American developments in Liberia will be watched with interest.

"It is difficult at present to estimate what the 1926 production is likely to be. The labor question has a distinct bearing on this, and, although all the labor necessary for production of full normal crops will be arranged by those estates which have not already done so, it is doubtful whether a full complement of trained labor is actually available at present to secure full crops in the last quarter of the year when the trees give their maximum yield. In view of the seasonal nature of the tire trade I do not look for any material increase in the free stocks of crude rubber until about the middle of next year, by which time, the production will be at full capacity.

"Present world stocks represent less than 3½ months' current absorption. Normally, comfortable working stocks should be the equivalent of about six months' absorption, and, provided a far-sighted view of the position is maintained, any excess of production over absorption in the meantime could be, and should be, carried without difficulty."

To Operate Hodgman Plant

The Hodgman Holding Corp., Tuckahoe, N.Y., was recently chartered at Albany with an authorized capital of $30,000 to manufacture rubber footwear, etc. Incorporators are Conrad Hubert, 60 Pillary St., Brooklyn; Theodore Friedeberg, 210 Riverside Drive, New York City; and J. F. Marks, 2 Seaman St., New York City. Weschler & Kohn, 29 Broadway, New York City, are attorneys for the corporation. The assets of the Hodgman Rubber Co., Tuckahoe, were sold a few weeks ago to a real estate operator for $625,500.

T. Komuro in U. S. on Visit

Taiji Kumuro, chief chemical engineer of the Furukawa Electric Manufacturing Co., Ltd., Tokyo, Japan, manufacturers of insulated wire, recently arrived in the United States on a protracted business visit. While here he will make his headquarters in New York.

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HUDSON ISSUES REPORT ON TIRE SIMPLIFICATION

Declaring that the present automobile tire situation is one of the most striking examples of economic waste prevailing in industry, R. M. Hudson, chief of the Division of Simplified Practice, Department of Commerce, recently issued a report embodying the views of automobile manufacturers, tire and accessory manufacturers, dealers' organizations and others interested in the subject.

The current nation-wide interest in reducing waste in production and distribution of commonly used commodities is a challenge to all contributing to such wastes to prove the soundness of their position, Mr. Hudson declared. There is in the proposal for fewer tire sizes a further opportunity to demonstrate the tremendous power that is in co-operative action by all interests for the elimination of waste in typical American industries. It is through the elimination of such wastes, as this example affords, that the automotive and related industries will find their greatest opportunities for future growth and development.

Practically all of those interviewed by the Division of Simplified practice agree that a simplified list of tire sizes is greatly to be desired, and that something should be done to bring it about. Some feel that efforts to date have been productive of results; others do not agree that progress toward fewer tire sizes is being made as rapidly as current conditions will permit.

A few have questioned the possible value of the service which the Department of Commerce might render in bringing about an early establishment of a simplified line of tires, while a much larger number express the belief that action will be expedited if the Division renders to the interests concerned the same service it is rendering to other industries having simplification problems.

Tire manufacturers are practically unanimous in their expressions for simplification of tire sizes, and wheel and rim manufacturers also agree that one big obstacle to further economy in production of wheels and rims is the present multiplicity of tire sizes.

Organize London Subsidiary

A company was recently incorporated in England under the Companies Act called Gutta Percha & Rubber (London) Ltd. The company, which occupies premises at 30-32 Bolsover St., London, W. 1., was formed with the object of marketing the products of Gutta Percha & Rubber, Ltd., Toronto, Canada, in Great Britain.

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SEPTEMBER RUBBER GOODS EXPORTS BREAK AUGUST HIGH RECORD BY $22,000

Higher Tire Prices are Chiefly Responsible for September Total of $5,065,262—Value of Shipments for Entire Year Expected to Exceed Fifty Million Dollars

Higher tire prices are chiefly responsible for the establishment of a new high record value for monthly exports of rubber goods which totaled $5,065,262 in September, 1925—breaking the previous high record made the previous month by about $22,000. At the average rate of monthly exports for the first three-quarters of 1925, the total value of shipments this year will exceed $50,000,000, writes E. G. Holt, assistant chief of the Rubber Division, Department of Commerce.

Price increases are reflected in the export value of shipments of automobile casings, inner tubes, and solid tires particularly. For the first seven months of this year, the average unit value per casing exported fluctuated around $11.75; for August, the average was $13.09, and for September, $13.98, or approximately 20 per cent higher than for the first half of the year. Inner tubes averaged about $1.75 each, according to declared values of exports for the first half of the year; for July, the average unit value was $1.91; August, $1.94; and September, $2.22, which is about 25 per cent higher than for the first half of the year. Similarly, the average value per solid tire increased about 20 per cent in September, the unit value for that month being $30.53.

Tire Exports Have Been Heavy

The tire export trade of the United States this year has been very heavy as compared with the last three years. In fact, the total exports of automobile casings from the United States to noncontiguous territories and foreign countries in 1924 numbered but 1,389,000 as compared with 1,360,000 during only nine months of 1925. It is apparent that if the average rate of shipments is maintained, the United States exports this year will approximate 1,800,000 automobile casings. These shipments are distributed throughout the world.

For September the leading tire markets were the United Kingdom, 17,666 casings; Argentina, 12,944; New Zealand, 9,108; Sweden, 8,253; Mexico, 8,237; Hawaii, 7,539; British India, 6,562; Cuba, 6,381; Philippines, 6,364; Porto Rico, 5,815; Uruguay, 5,456; Dutch East Indies, 5,373; and Australia, 5,356. The largest customers for inner tubes were Cuba, United Kingdom, Argentina, Brazil, Mexico, Sweden, Philippines, Venezuela, Canada, and Denmark

There appears to be no decided upward trends in prices of other rubber products, except water bottles and syringes, which averaged nearly $1 each in September as compared with $0.75 each for previous months, and scrap rubber which averaged 6⅔ cents per pound in August and September as compared with between 4 cents and 5 cents per pound previously.

The price per pound of rubber hose exports indicates a slight upward trend, but other mechanical rubber goods, rubber thread, boots and shoes, and specialties appear to be fairly steady in price. Canvas rubber-soled shoes, and rubber heels and soles have in recent months had a slightly lower average unit value than formerly. Although export prices of fine rubber goods have now been fairly steady for some months, increases were made toward the close of 1924 and early in 1925 in several specialty lines.

(Concluded on Page 112)

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EXPORTS IN SEPTEMBER BREAK AUGUST RECORD

(Concluded from Page 111)

Although higher prices were the principal factor in the unusually high value of shipments during the month, the volume of business in practically all lines was satisfactory. September exports of solid tiring in length (209,495 pounds) were the largest monthly shipments ever recorded for this commodity. September was the best month thus far this year for exports of rubber shoes and rubber thread, the second best month for exports of rubber boots and automobile inner tubes, and the third best month for automobile casings.

The heavy trade in rubber footwear is to be expected at this season of the year, when the European market is laying in supplies. The United Kingdom, Austria, Denmark, Switzerland, Germany, and Norway all came into the important market column in September for waterproof rubber footwear.

Waterproof Cloth and Clothing Trade

American exports of waterproof cloth and waterproof clothing, the values of which are not included in the figure of total rubber-goods exports stated in the first paragraph, are also of considerable importance. Some of the important markets for waterproof auto cloth and rubberized fabrics were: Canada, 88,264 square yards; United Kingdom, 73,295; Australia, 28,001; Argentina, 19,884; Dutch East Indies, 14,969; Mexico, 14,494; and the Philippine Islands, 13,072. In September 10,705 waterproof outer garments, valued at $24,618, were exported; the United Kingdom taking 2,216, British South Africa 1,658, Newfoundland 1,342 and Canada 1,035.

RUBBER COSTUMES

Although ordinary costumes were used recently for "Hamlet" in London, rubber was the material from which they were made at Vienna in the latest production of "King Lear" under the direction of Max Reinhardt. King Lear's cry, "Ye be men of stone!" gave birth to the idea that costumes and scenery should look like stone so Ernest de Weerth, stage designer, was commissioned to give the actors, as well as settings, the appearance of sculpture. After experimenting with mediums De Weerth finally selected rubber. Even the armor and shields used in the play were of rubber. The actors' hair was greased and painted gray to carry out the idea.

Buy Dutch Plantation

A report from The Hague recently stated that the Java Bank has sold to a British syndicate 48,000 acres of rubber plantations on the East Coast of Sumatra for nearly £1,000,000. The new British company, for which the syndicate is acting, is said to have a capital of £1,500,000.

6,200 EMPLOYEES STRIKE AT FORT DUNLOP WORKS

(Special to THE RUBBER AGE*)*

Some 6,200 employees at the Fort Dunlop Works, Birmingham, Eng., of the Dunlop Rubber Co., went out on strike on October 28, as the result of a dispute over a new system of speeding up introduced into the three mixing mills. Their action was taken in defiance of the entreaties of the factory council, the works committee of which was originally set up at the request of the workers for dealing with questions in dispute. The committee was unable to persuade the men to return to work. All the rubber workers with the exception of the engineering staff were affected by the dispute.

The engineering staff did not go out, although they took up a sympathetic attitude towards the strikers. At a mass meeting they passed a resolution recognizing the justice of the workers' claims, and expressing the view that the task demanded of them was an "inhuman effort." They also asked the rubber workers to form an appropriate union for their class of work. This advice was obviously taken, for at a meeting of the rubber workers a resolution was passed in which the workers expressed a desire to rescind their previous resolution concerning trade union representation and negotiation, and nominating the Transport General Workers' Union as the recognized body for all future negotiations.

The strike was settled after a week by granting employees' terms.

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THIRD SEMI-ANNUAL SURVEY SHOWS LARGER TIRE STOCKS THAN IN 1924

35,331 Dealers Report 2,000,150 Casings on Hand October 1 in Reports to Rubber Division Increased Stocks Include Balloons, Tubes, Solids and Cushions

Marking a continuation of its program of compiling information about the domestic distribution of important commodities, the Department of Commerce has made its third semi-annual survey of stocks of automobile tires and inner tubes held by dealers in the United States. This survey was rendered possible through the cooperation of tire dealers who were asked to report on individual forms the number of tires and tubes held by them on October 1, 1925. Information from 32,830 reports which had reached the Department by October 14, was compiled by the Rubber Division in the form of a preliminary statement which was issued as Rubber Division Special Circular No. 1013, on October 16, 1925. In that circular it was stated that a more complete and detailed summary would be issued later, and the following paragraphs are submitted in accordance with that statement.

Individual returns from 35,331 dealers having automobile casings on hand are used in this final compilation; of these 16,240 dealers reported stocks of balloon casings for 20″, 21″, and 22″ wheels. The statistics for October 1, 1925 may be compared with the compilation of October 1, 1924, as follows:

Dealers' Stocks of Automobile Tires

	October 1, 1925			October 1, 1924		
	Number	Dealers Reporting	Average per Dealer	Number	Dealers Reporting	Average per Dealer
Total casings	2,000,150	35,331	56.6	1,402,879	26,161	53.6
Balloons	283,552	16,240	17.5	135,366	8,305	16.3*
Tubes	3,486,120	35,163	99.1	2,197,553	27,480	79.9
Solid & cushion	53,060	2,122	25.0	30,538	1,449	21.1†

(*Including interchangeable balloons for October 1, 1924;
†Solid tires only for October 1, 1924.)

The average stocks of automobile casings are found to be only slightly greater now than they were a year ago but stocks of inner tubes are much heavier than they were in October 1924. The percentage of dealers stocking balloon casings for 20″, 21″, and 22″ wheels was not ascertained in 1924, but in April, 1925, only 30% of the dealers reporting carried balloon tires as compared to 46% in October 1925. The growing importance of the regular balloon tire in the replacement trade is shown by the fact that balloon tires now constitute one-seventh of the total stocks reported as compared to one-fourteenth in April 1925. Stocks of solid and cushion tires appear to be almost normal.

The folowing analysis of reports received in the present survey shows that about the same percentages of large and small dealers reported as in the survey of October 1, 1924.

Dealers Classified by Volume of Stock

	Per Cent of Total Dealers Reporting	
	Oct. 1, 1925	Oct. 1, 1924
Less than 10 casings	22.63	23.19
From 10 to 25 "	29.88	32.11
" 26 to 50 "	21.23	22.65
" 51 to 100 "	14.79	13.70
" 101 to 200 "	7.02	5.49
" 201 to 300 "	1.99	1.44
" 301 to 400 "	.83	.52
" 401 to 1000 "	1.24	.64
Above 1,000 casings	.39	.26
	100.00	100.00

The existence of larger stocks at this time in the hands of manufacturers should be considered in connection with the increased stocks in the hands of dealers. The following statistics were prepared from reports of manufacturers by the Rubber Association of America Inc.

Manufacturers Stocks of Tires

	Automobile Casings	Inner Tubes	Solid & Cushion Tires
September 30, 1924	4,524,405	6,038,868	179,927
*September 30, 1925	5,779,822	7,302,643	189,448

*Preliminary statistics.

(Concluded on Page 122)

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

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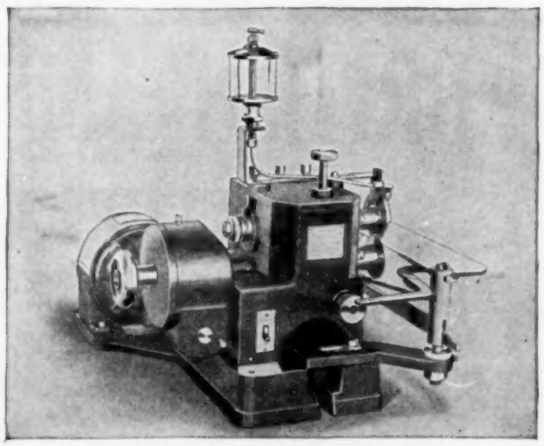
TRIMMING



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Cable Address "WILTRIM"

R. T. VANDERBILT PLANS TO INCREASE PRODUCTION

The R. T. Vanderbuilt Co., Inc., 50 East 42d St., New York, in connection with the issuance of its price list for 1926, recently reported that its Mineral Rubber business is still growing and that there has been an unusually large increase in the volume of this business during 1925. The two plants at Langley and McNamee, South Carolina, have been in almost continuous operation during this year manufacturing "Dixie" Clay. A shortage of hydro-electric power in the last two months hindered the mills considerably but they are again on a 24-hour schedule through a line run to the Muscle Shoals power plant. A third drying and grinding unit is now projected on the "Dixie" property which is expected to be in operation early next spring.

The sales and use of "Thermatomic Carbon", manufactured at Sterlington, La., have now reached a volume equal to the daily capacity of the plant on a 24-hour schedule. Plans have been completed for a second plant but as production cannot be expected from this new mill before April, 1926, the company is exercising care in making contracts so that the material is not oversold. A paper pulp plant at Johnsonburg, Pa., owned by a large magazine produces "Quaker" Whiting as a by-product. Tonnage has increased approximately 25 per cent this year and the Vanderbilt company is in a good position to supply the demands for this material in 1926.

"Sussex" Whiting is from a plant started a little over a year ago at Newton, N. J. Laboratory work looking toward producing an additional grade of whiting has been completed and the construction of a new plant to produce this grade is now being considered. In addition to the original ultra-accelerator plant for producing "Tuads", "Zimate" and "Super-Sulphur" at Lincoln, N. J., production of part of these materials is now being taken from a second plant.

Goodrich Declares Dividend

At a meeting of the board of directors of the B. F. Goodrich Co., held on October 28, 1925, a dividend of $1.75 per share on the outstanding preferred stock was declared, payable on January 2, 1926, to holders of record at the close of business December 15, 1925, and a dividend of $1.00 per share on the outstanding common stock without par value was declared, payable November 16, 1925, to holders of record at the close of business November 9, 1925.

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FILIPINOS TO OPPOSE BILL FAVORING RUBBER

Filipino political leaders are preparing to block any attempt of the Philippine Congress to pass a bill amending the land laws so as to favor the development of the rubber industry by large corporations. Senator Sergio Osmena, now in the United States as an envoy from the Philippine Legislature, has been instructed to do all he can to prevent the passage of any measure which would place control of the rubber industry in the hands of American or foreign capitalists.

Governor General Wood recently issued a proclamation opening to disposition in accordance with the provisions of the land laws certain tracts of public land in the province of Bataan, situated on Manila Bay about 30 miles from Manila. These lands are said to be suitable for rubber production by the Bureau of Forestry.

Move Atlanta Office

The Foxboro Co., Inc., Foxboro, Mass., manufacturers of indicating, recording and controlling instruments, recently removed their southern office to Room 426, Atlanta Trust Bldg., Atlanta, Ga. This office, which was previously situated in Birmingham, Ala., will be in charge of A. W. Taber, who for several years has been connected with the Foxboro Co. as a sales engineer.

Foreclosure Sale

ENTIRE PLANT--MACHINERY & REAL ESTATE

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SPRINGDALE, CONN.

Friday, December 4, 1925 at 2 o'clock P.M.

ON THE PREMISES

Property comprises about 9 3-10 acres and is situated in Springdale, Fairfield County, Connecticut, along the line of the New Canaan Branch of the N. Y., N. H. & H. R. R. Buildings are of brick, in excellent condition; main building about 220 x 60 ft., up-to-date construction. Machinery consists of calenders, mills, spreaders, motors, shafting, etc. and all incidental machinery for rubber manufacturing plant including manufacture of automobile tops.

Further particulars may be obtained from

MYERS & GOLDSMITH, Attorneys

100 Broadway **New York City**

CRUDE RUBBER IMPORTS INCREASED IN OCTOBER

According to statistics recently issued by the Rubber Association, 34,908 tons of crude rubber were imported into the United States during October, compared with 27,071 tons in September, an increase of over 7,000 tons.

A comparison with October, 1924, however, shows a decrease of 2,249 tons, imports in that month being 37,157 tons. The greatest decrease this year was in the receipts of plantations which totaled 31,450 tons, compared with 34,073 tons in October, 1924. Paras also showed a decline; 1,647 tons were received in October, 1925 against 2,172 tons in the same month last year. Only 106 tons of Africans arrived in October, 1925, compared with 613 tons in October, 1924. Centrals, however, increased this October to 1,263, against 157 in the same month last year. Guayule increased from 142 tons in October, 1924, to 414 tons this year. Although in October, 1924, no Manicobas or Matto Grossos were received, this October 28 tons were received.

The importations of plantations for the ten months ended October 31 show a total of 287,694 tons as compared with 246,033 tons in the same period last year. For these ten months 12,795 tons of Paras were received, compared with 10,319 tons in 1924. Africans in the ten months of 1925 totaled 2,299, against 2,904 in the same period last year. Centrals totaled 3,494 for these ten months, against only 646 in 1924. Guayule receipts increased more than 100 per cent to 2,797 tons, as compared with 1,116 tons in the ten months ended Oct. 31, 1924. Total importations this year aggregate 309,268 tons, compared with 261,018 in the same period of 1924—an increase of almost 20 per cent.

The 31,450 tons of Paras received this October, included 11,765 which were shipped from Singapore, 3,233 tons from Belawan-Deli, 2,898 tons from London; 2,779 from Penang; 2,750 from Pt. Swettenham; 2,501 from Batavia; 1,821 from Colombo and 1,372 from Sourabaya. New York received 25,168 tons of these plantations; Baltimore, 4,128; Boston, 571; Philadelphia, 277. Los Angeles received 1,235 tons and Seattle, 71 tons.

In October 199 tons of waste, 153 tons of balata and 1,081 tons of miscellaneous gums were imported.

Ask Receiver for Columbus

William E. Armacost, a stockholder and former general manager of the Columbus Tire & Rubber Co., Columbus, Ohio, recently filed a petition for a receiver in the Franklin County court. John W. Zuber, president, and M. James Miscoe, secretary, are named as codefendants. Mr. Armacost alleges in the petition that the two officers are operating the business in an extravagant way, are carrying stock salesmen on the general expense account and are paying as high as three per cent a month for loans. A hearing on the petition will shortly be held.

INDIA LETS CONTRACT FOR $45,000 BUILDING

Officials of the India Tire & Rubber Co., Akron, announced recently that they had let a contract for the construction of a new factory building which, when completed, will increase the capacity of the company 30 per cent. The building, which will cost approximately $45,000, will be 80 by 80 feet, three stories in height, with a floor area of 19,200 square feet.

The building is expected to be completed by Jan. 1. New equipment will be installed as soon as possible so that by the time the spring rush begins India will have a capacity of 1,700 tires a day, as compared with the present capacity of 1,350. India officials said that the decision to build was reached when it was foreseen that the 1926 demand would be unusually large.

Lee Reports Profit

The Lee Tire & Rubber Corp., New York City, recently reported a net profit, for the quarter ended September 30, of $79,279 after expenses, depreciation and interest, equivalent to 37 cents a share. This compares with a net profit of $152,685, or 71 cents a share in the preceding quarter and a net loss of $22,022 in the third quarter of 1924. Net profit for the first nine months of 1925 now totals $237,338, equal to $1.10 a share, compared with a net loss of $173,586 for the same period last year.

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PRESIDENT & TREASURER

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DEPARTMENT OF COMMERCE RELEASES AMAZON REPORT

"Rubber Production in the Amazon Valley," the third of a series of regional studies undertaken by the Department of Commerce under authority granted by the 67th Congress, is now ready for distribution. The report, which covers 370 pages, was prepared under the direction of H. N. Whitford, former chief of the Crude Rubber Section of the Rubber Division, by William L. Schurz, commercial attaché; O. D. Hargis, special agent; C. F. Marbut, chief of the Division of Soil survey; and C. B. Manifold, soil surveyor of the Department of Agriculture.

In addition to discussing the present rubber production in the Amazon Valley, the report deals exhaustively with the factors which would determine the success or failure of any rubber plantation established there. Recent increases in the price of rubber which have stimulated greater collections in the region bear out the contention of the experts who made the survey that the future of wild rubber production in Brazil will be primarily dependent on the trend of market prices. It is stated in the report that these prices will of course depend in turn on the relation between future demand for rubber and the production of present or newly planted areas, as wild rubber itself is no longer a determining factor in deciding the course of the world market. It is pointed out in the report that when the price rises to a point where exploitation is profitable many persons otherwise occupied in the Amazon Valley turn to the collection of latex. The Amazon lacks both capital and men at the present time.

The following figures represent exports but in the lack of production records of any kind and considering the absence of domestic consumption, the figures may be regarded as equivalent to output:

Production (Exports) of Crude Rubber, Amazonia, 1912-1923

YEARS	AMAZON REGION Brazil	Peru	Bolivia	Total	Brazil outside Amazon region
	Tons	*Tons*	*Tons*	*Tons*	*Tons*
1912	38,173	2,814	4,080	45,067	4,114
1913	34,450	2,780	5,143	42,373	1,781
1914	31,714	2,272	4,485	38,471	1,817
1915	31,555	3,401	5,055	40,011	3,611
1916	28,868	2,812	4,917	36,597	2,627
1917	31,595	3,295	5,842	40,732	2,403
1918	22,215	1,737	4,288	28,240	446
1919	32,251	3,232	5,347	40,830	1,001
1920	22,927	1,478	3,759	28,164	661
1921	17,182	133	2,844	20,159	257
1922	19,483	607	3,079	23,169	373
1923	17,991	567	2,979	21,537	...

According to the statistics compiled by the Crude Rubber & Foreign Produce Corp., New York, the 1924 production of Brazilian rubber was 23,514 tons.

Copies of the report may be obtained from the Superintendent of Documents, Government Printing Office, Washington, or from any of the branch offices of the Department of Commerce. The price is 65 cents.

Norwalk Reports Income

The Norwalk Tire & Rubber Co., Norwalk, Conn., recently reported a net income of $128,625 after all charges but before Federal taxes for the quarter ended September 30. Net income for the first nine months of 1925 was reported as $346,006.

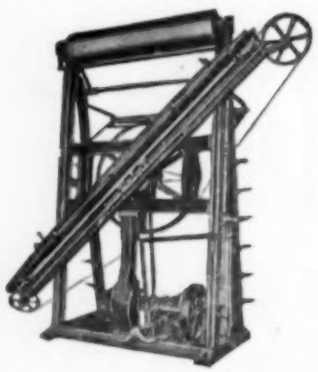
TO BUILD ADDITION TO FIRESTONE COTTON MILL

Announcement was recently made by the Firestone Tire & Rubber Co., Akron, that an addition to cost $250,000 will be built on the Fall River, Mass., plant of the Firestone Cotton Mills. It was said that the installation of new methods at the time of the purchase of the mills last year has not provided sufficient capacity to meet demands made on the factory. Harvey S. Firestone, accompanied by J. W. Thomas, vice-president of the Firestone Tire & Rubber Co.; C. A. Myers, chief engineer; and W. T. Lewis, purchasing agent, recently visited Fall River and while there approved the plans.

It is planned to increase the capacity of the mill by at least 20 per cent; this is in addition to the increase, estimated at 30 per cent, resulting from electrification of the mill when the Firestone company took it over. At the present time the mill is producing 1,000,000 pounds of cord fabric a month. With the completion of the addition, it is estimated that this production will be increased to 1,200,000 pounds a month. The number of employees will be increased from 930 to at least 1,200.

Delbee Changes Name

The Delbee Rubber & Supply Co., Inc., Syracuse, N. Y., recently filed a certificate in the office of the Secretary of State at Albany changing its corporate title to the Delbee Rubber Co., Inc.



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Cuts Cord or Flat Woven Fabrics with equal ease and precision.
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TO HOLD ANNIVERSARY DINNER ON DECEMBER 7

At a preliminary luncheon held November 6 in the Boston Tire district, it was voted to hold the 100th Anniversary Dinner, marking the founding of the rubber industry by Thomas C. Wales of Boston in 1825, on December 7 at 6:30 p.m. The affair, which will be informal, will be held in the New Boston Chamber of Commerce, 80 Federal St., Boston, Mass. Tickets are $5.00 each.

On the motion of Day Baker it was voted to invite Quincy Tucker to act as chairman of committees and to appoint committees to serve. Mr. Tucker then appointed E. A. McCoy, Boston manager for the Kelly-Springfield Tire Co. and N. P. James, Boston manager for the Miller Rubber Co., on the entertainment committee; R. G. Souther, Boston manager for the Ajax Rubber Co., and E. C. Newcomb, Boston manager, General Tire & Rubber Co., on selling tickets in the tire district of Boston; C. A. Wheeler, Boston manager, Beacon Falls Rubber Shoe Co., and Hugh Bullock, treasurer, Converse Rubber Shoe Co., on selling tickets in the footwear districts; J. H. Stedman and G. W. Baily, president and treasurer respectively of the Stedman Products Co., and Dr. D. A. Cutler, president, Alfred Hale Rubber Co., for selling tickets in the rubber manufacturing districts south and west of Boston; H. E. Croker, Boston manager, U.S. Tire Co., and H. R. Karnaghan, Boston manager, Seiberling Rubber Co., for selling tickets in the rubber manufacturing districts of Cambridge, Watertown and Andover; M. E. Turner and George McCrea for selling tickets to reclaimers.

Mr. Tucker also appointed William M. Morse of the *India Rubber World* and Peter P. Pinto of THE RUBBER AGE on the New York committee. P. L. Palmerton, A. L. Viles and H. N. Whitford have been invited to name a speaker on the crude rubber situation and prospects.

Wyandotte Begins Operations

The Wyandotte Rubber Products Corp., Chelsea, Mich., recently began the manufacture of toy balloons and rubber novelties in a building which had been completely remodeled for a factory. The company formerly was located in Wyandotte, Mich. Initial production will be about 300,000 balloons a day. Approximately 50 hands have been employed. John W. Saunders is president and the directors include W. H. Kilpatrick, general manager of the Chrysler Motor Co.; Paul Plessner of the Paul Plessner Laboratories, Detroit; C. Lehman, John W. Saunders and H. W. McConnell, who is also secretary-treasurer and general manager. C. J. Hively is superintendent.

Akron Standard to Build

A new building to house equipment and machinery will be added to the factory of the Akron Standard Mold Co., 1624 Englewood St., Akron, this month. The new addition will cost $40,000.

INDIA WELL REPRESENTED AT A.E.R,A, CONVENTION

The India Tire & Rubber Co., Akron, was well represented at the Atlantic City Convention of the American Electric Railway Association. J. M. Alderfer, president, W. G. Lerch, superintendent, Lynn Harvey and Harry L. Corbett, divisional sales managers, and the following members of the sales department were present: L. L. Barnholt, Wm. P. Neville, W. C. Withers, M. N. Semler, A. E. Verrill, C. J. Doyle and J. B. Mills.

The India headquarters were at the Traymore Hotel. One of the features of the India activities was a big advertising balloon moored to a building just across the board walk from the pier. This balloon was lettered "India Balloon Tires" on one side and "India Bus Tires" on the other side. A feature of the exhibits at the convention was a large double-decked, gas-electric bus exhibited by the Fageol Company, equipped with India 36 x 8 Heavy Service Bus Tires.

Among the visitors at the India booth during the convention were Frank W. Webb, Baltimore distributor, H. L. Raube and P. B. Wood, Newark, N. J., distributors of India tires.

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THE RUBBER AGE serves one field only—that of rubber *manufacturing*. It does not cater to the retail tire dealer.

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2. A daily cable giving closing prices on plantation rubber in London and Singapore.
3. News of the rubber producing and consuming industries and facts bearing upon the rubber situation throughout the world.
4. Manifests of rubber carrying steamships showing all arrivals of rubber and allied products in the Port of New York.

In brief, The Journal of Commerce prints all the rubber news and keeps its readers in close touch with rubber developments daily, thereby offering a service which is given by no other publication in the field.

EXAMINE TEN ISSUES WITHOUT OBLIGATION

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NAME .....

STREET .....

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REPEAL OF RESTRICTION BELIEVED UNNECESSARY

(Special to THE RUBBER AGE*)*

It was officially announced at the beginning of November that the percentage of standard production of rubber that may be exported at minimum duty from British possessions for the quarter then commencing had been fixed at 85—the automatic increase in accordance with the provisions of the existing scheme.

This announcement makes it clear that the British Government has no present intention of interfering with the normal working of the Stevenson plan, but it is probable that by the end of the next quarterly period, on Jan. 31, the scheme will have virtually ceased to function. The further 10 per cent release which will presumably then be due will raise the exportable allowance to 95 per cent. It is doubtful whether many companies are at present able to produce on this scale, and an advance to 95 per cent seems likely to bring the labor problem to the fore in Malaya.

Owing to the removal of the arbitrary restriction of 400 lb. as the maximum standard production, it is difficult to estimate the amount of rubber which will be released by the present 10 per cent increase, but it should not be less than 40,000 tons per annum.

The failure of restriction to effect a reduction in world supplies was due to the rapid expansion in the Dutch estate and native output resulting from it. The course of British Malayan and Dutch East Indian production is compared in the following table:—

1921	151,000	71,000
1922	215,000	95,000
1923	195,000	123,000
1924	180,000	152,000

The 1925 figures are being awaited with interest. An increase is expected in both cases; a large one in the Dutch output.

W. C. Withers Joins India

W. C. Withers has just joined the sales force of the New York branch of the India Tire & Rubber Co., Akron. Mr. Withers, who will cover the metropolitan territory, has been in the tire selling field for 12 years. He formerly did special sales work for Goodrich out of New York and has represented Republic in and around New York City. He is well liked in the territory, and has already opened up several very attractive accounts for India.

The India Company has also announced the appointment of J. N. Dunlevy to the advertising and sales promotion division. Mr. Dunlevy was formerly business manager of the Palmer Art Studio in Akron. He will work with J. B. Mills who is in charge of advertising and sales promotion.

Stedman Exhibits Flooring

The Stedman Products Co., South Braintree, Mass., had an interesting display at the American Hospital Conference held recently in the Armory, Louisville, Ky. In addition to an extensive display of flooring the Stedman company showed mural panels of rubber telling various nursery tales. One exhibit showed a map of the United States and a complete picture of the new Southern Baptist Hospital in New Orleans, all made of colored rubber flooring. The exhibit was under the personal charge of James H. Stedman, president of the Stedman Products Co.

Issue Guide to Plantations

"Rubber Producing Companies" for 1925, issued by the Mincing Lane Tea and Rubber Share Brokers' Association (Limited), has just been published. This book has become a standard work of reference, and contains the latest details of rubber and rubber-cum-tea companies. In addition to the usual information this year's issue contains such particulars as standard production and forward contracts. The book is edited by Alfred Kendall, the secretary of the association, and is published by the London "Financial Times" at 7s.6d.

High Prices Do not Always Indicate Quality

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HIGH PRICES ENDANGER FRENCH TIRE INDUSTRY

According to press cables, several of the smaller French rubber manufacturers have already failed and a number of larger firms are finding it difficult to make a profit, due to high prices of crude rubber caused by both the large American demand and the Stevenson plan. For several months rubber prices in Paris have undergone a steady and almost daily rise.

Crude rubber sold for 8.37 francs a kilogram in Paris in 1914 and in May, 1924, the price was 8.42. But in December the price touched 16.90, continuing its rise to 47 francs in July, 1925, and 53.63 francs on Nov. 5 last.

The Stevenson plan, although not affecting the Dutch Indies and French Indo-China outputs, caused a world-wide rise especially because the American rubber demand increased simultaneously with the British restricted output. Germany also is a great rubber consumer, as she supplies Russia and Central Europe with crude rubber and its products. Development of balloon tires is another reason for greater world consumption, and last year rubber exports in the world were far below consumption, which is the greatest reason for the rapid price increase this year.

The increase under the Stevenson plan of the ratio to 85 per cent normal was not sufficient to prevent the increase. Tire production costs are practically entirely affected by rubber and cotton prices. If the United States and Great Britain begin their threatened trade war, with rubber and cotton as weapons, France will suffer both ways.

French stocks of rubber are believed sufficient to prevent the necessity of an excessive increase in tire prices but gradual increases will have to take place. A third factor alarming the French producers is that they have to buy rubber from England and thus must pay the increasing English prices with depreciating francs. The Paris market does not see an end to the rubber price increase under these conditions.

Since Nov. 5 French manufacturers have increased tire prices by 15 per cent and prices of inner tubes by 30 per cent but consumers are somewhat comforted because that tires now last twice as long.

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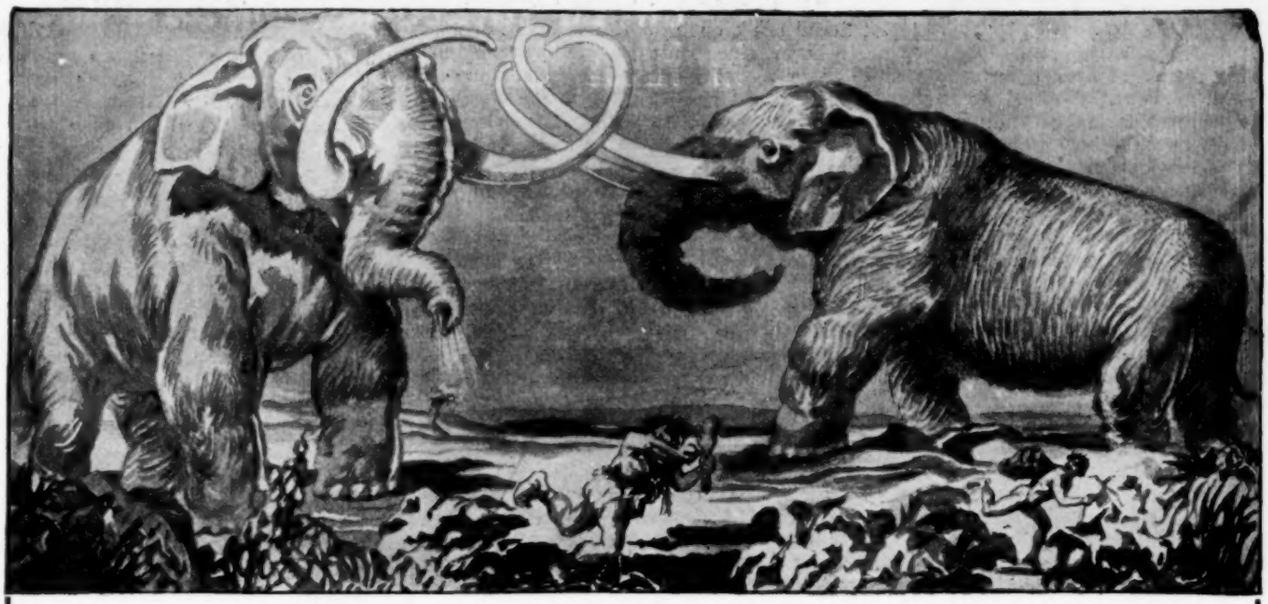

What Mighty Muscles Used To Do!

THE Mammoth, with his 12-foot tusks, standing 16 feet high and 30 feet long, reigned undisputed monarch of the animal world of 50,000 years ago. The mighty muscles of the Mammoth easily uprooted large trees or drove his thirty tons of solid flesh and bone through tangled jungles.

Today the only evidence of the Mammoth's existence is found in the fossilized bones of amazing size and weight unearthed from time to time in unexpected places. Working from the restored skeleton on exhibit at the American Museum of Natural History in New York, the firm of Messmore and Damon, specialists in the production of mechanically operated animals, have recently produced two mechanical Mammoths of life size. These amazing models apparently breathe, roll their eyes, switch their tails, wag their heads, flap their ears and stretch out their trunks in a most realistic manner.

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IXL SPEED REDUCERS

Sixteen of these compact enclosed reduction units within the models and driven by motors, produce the lifelike motion of the various parts. Without them the startling, lifelike effect could not have been produced.

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BELIEVES RESTRICTION IS A COMPLETE FAILURE

(Special to THE RUBBER AGE*)*

"My views regarding restriction still remain the same," declared A. J. Ritchie at the recent annual meeting in London of the Cairo (Malay) Rubber Syndicate, Ltd., of which he is chairman. "I am an unrepentant disbeliever and still consider that once the Dutch planting interests had rejected the proposals made to them for the protection of the industry as a whole, the British planting interests should have dropped the proposal forthwith and left restriction to the natural price factor. As it is, the enormous profits which have been made and are still being made by the Dutch planting interests have been virtually at the expense of the British—the increase in the production from the Dutch Indies has practically balanced the decrease effected by restriction in Malay and Ceylon—and if those profits have been wisely used, the Dutchmen and their colonial subjects will be in a far better position than they would have been had there been no restriction to hold their own against us when the world's output once more exceeds the world's demand.

"A further result of restriction has been a serious loss of labor in the Malay, particularly Chinese, many of whom transferred themselves to the Dutch colonies when restriction was started, and considerable difficulty is now being experienced in replacing the labor so discharged. This shortage and the time within which it can be replaced seems the crux of the present position.

"As to restriction having had any material effect on price, I am again an unbeliever, since statistics would appear to prove that the recent meteoric increase in the price has been due to the increase in the American demand, assisted by the increase in the amount of the commodity taken by a more settled Europe.

"Undoubtedly restriction has had exactly the opposite effect to that originally adduced by its supporters—namely, a stabilization of the price of the commodity, since, after the sudden increase in price following the announcement of restriction (such increase being due to the American consumer's justifiable uncertainty as to the operation of such a scheme) we had a long period of low prices with the Americans gradually using up their stocks and holding off from the market as long as possible, with the result that when the revived demand came prices soared in such a way that a number of possible new uses for rubber may very naturally not mature, or be held up indefinitely. Obviously to encourage manufacturers to find new uses for rubber the price must remain fairly stable and not jump 200 per cent in less than six months, as it has recently. No one can foretell the effect of high prices."

Hammond Increases Capital

Stockholders of the Hammond Rubber Co., Massillon, Ohio, manufacturers of toy balloons, recently voted to increase the authorized capital of the company from $10.000 to $25,000.

VICTOR PROPERTY SOLD BY RECEIVER FOR $50,000

The factory and equipment of the Victor Rubber Co., Springfield, Ohio, which went bankrupt about a month ago, were purchased recently by J. B. Cartmell, George Cugley and Arthur Hill from Henry H. Durr, receiver and former president. The plant brought $50,000. J. B. Cartmell, who is president of the First National Bank of Springfield, announced that the business will be continued and expanded. The Victor tire business was sold some months ago to the Hamilton Rubber Mfg. Co., Trenton, N. J., but the rubber mat and the mechanical rubber goods departments have been operating under Receiver Durr.

Paul Martin, counsel for the receiver, presented Judge Knapp, sitting in Common Pleas Court, with the report of the appraisers which listed the assets at $307,358.90 and the liabilities at $425,390.02. The assets were listed as follows: cash, $4,398.69; customers' notes, $19,236.59; accounts receivable, $194,576.73; current inventory, $37,813.80; deferred charges, $1,333.18; plant and unsold equipment, $50,000. The court confirmed the sale at the request of Mr. Durr.

Qualitex Bankrupt

The Qualitex Company, 1822 Oakview Road, Cleveland, Ohio, manufacturers of storage battery jars and other hard rubber goods, recently filed a voluntary petition in bankruptcy. Liabilities were listed at $58,564. and assets at $18,288.

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DOVAN SUIT AGAINST CORONA TIRE CLOSED

The suit of the Dovan Chemical Co., New York, against the Corona Cord Tire Co., East Butler, Pa., which was tried before the U.S. Circuit Court in Pittsburgh recently, has closed but no decision awarded. The decision will not be given for at least a month and probably not before the end of the year.

This suit is a claim of infringement on the basic patent held by the Dovan Chemical Co. covering the use of all di-substituted guanidines as rubber accelerators. After a decision has been rendered, it is thought that an attempt will be made to bring the case before the U.S. Supreme Court so that a final decision can be obtained. Should final decision be in favor of Dovan it will probably mean that the litigation over the patent for diorthotoly-guanidine will end, as the product is a di-substituted guanidine and will be covered by the basic patent.

Crowley Joins American Chain

Guy F. Crowley, formerly in the development department of the Firestone Tire & Rubber Co., has joined the technical staff of the American Chain Co., Inc., Bridgeport, Conn., as sales engineer of their tire bead wire division. Mr. Crowley has had several years experience in the tire industry, having been associated with the U.S. Tire Co. at their Hartford plant as chief draftsman for several years, and with the Fisk Rubber Co., Chicopee Falls, Mass., as assistant chief engineer, and later with the Firestone company as development engineer. Mr. Crowley is a member of the A.S.M.E. In his new connection Mr. Crowley will handle the special wire structure known as flat tape, to be used in the construction of straight side tire beads, which the American Chain Co. is introducing to the tire industry.

Foote Appoints Agents

The Foote Bros. Gear & Machine Co., Chicago, Ill., recently announced the appointment of the M. A. Hughes, Railway Exchange Bldg., Seattle, Wash., as representatives for their IXL Gear and Speed Reducers in Washington, Oregon and the Coeur D'Alene territory of Idaho.

Seeks Blekre Foreclosure

Samuel F. Nelson recently filed suit in Ramsay County District Court for foreclosure of a mortgage on the property of the Blekre Tire & Rubber Co., St. Paul, Minn. The Joseph A. Rogers Agency, Inc. and Oscar Halem and E. O. Blekre, receivers, were named codefendants. The Blekre company went into receivership last June. It was organized in 1919 as an Iowa corporation and commenced the manufacture of tires in 1920. The company was reorganized as a Minnesota corporation about three years ago. The direct cause of the company's inability to meet its obligations was the high price of crude rubber. E. O. Blekre, one of the receivers, is the founder and a former president of the Blekre company.

"Pulled 20 to 30 Inquiries"
So writes a chemical manufacturer whose booklet was reviewed in THE RUBBER AGE. Real proof of results!

Increase Capital

According to an item published in the *New York Times*, the International Rubber Co., Poplar Bluff, Mo., has increased its capital from $30,000,000 to $31,500,000. The company has only been in business a little over two months and was formed to absorb the Poplar Bluff Rubber Co., according to J. H. Dalbey, president. The company at which the time of its organization had an authorized capital of $500,000, planned to build a $250,000 factory for the manufacture of cushion inner tubes. Mr. Dalbey was founder of the Rubber Ace Tire Co., Elgin, Ill., manufacturers of the Rubber Ace, rights for which were purchased by the B. F. Goodrich Co., Akron, some months ago.

Seiberling to Build

The Seiberling Rubber Co., Barberton, Ohio, has let a contract for the erection of two warehouses, one to cost $50,000 and a smaller one to cost $8,000. The larger building will be two stories high, of fireproof construction and will have a floor area of 19,200 sq. ft. Both buildings will be used for storage purposes, the larger one for finished products and the smaller for storing raw material.

Dunlop Honors Employees

The Dunlop Rubber Co., Toronto, Canada, recently distributed service pins to employees who have been with the company for ten, 15, 20 years and more. E. B. Ryckman, president, himself one of the oldest in years of service, made the presentation at the Dunlop head office and factory, Queen Street and Booth Ave., Toronto. The Dunlop Canadian company was established in Toronto nearly 32 years ago. John Westren, vice president and general manager, holds the record for length of service. having been with the company for over 30 years.

Industrial Again Operating

The Industrial Chemical Co., 200 Fifth Ave., New York, is again in operation and is now offering to the rubber industry its Improved Alba Whiting, contracts for which are now being booked for 1926.

Hudson Creditors to Meet

The first meeting of creditors of the Hudson Tire & Rubber Corp., Yonkers, N. Y., will be held before William C. Duell, referee in bankruptcy, on Dec. 1 at two p. m. at the County Court House, White Plains, N. Y. Creditors on that day will prove claims, appoint a trustee, examine the bankrupt and transact other important business.

OPERATIONS RESUMED AT AMERICAN FACTORY

Operations were recently resumed in the factory of the American Rubber & Tire Co., Akron, which has been closed down in most departments since last August. Through a reorganization plan the company is said to have obtained $100,000 additional capital and all but $300,000 of an outstanding indebtedness of approximately $880,000 has been liquidated.

Most of the creditors have accepted common stock for their notes, thus relieving the company of large interest charges. The remaining debt represents bank loans. Overhead has been reduced about 85 per cent by eliminating practically the entire sales force. American tires are now being sold direct to distributors who have their own sales organizations. According to Floyd C. Snyder, president, the outlook for future prosperity is good.

India Declares Dividend

A two per cent dividend on common stock of the India Tire & Rubber Co., will be paid on Jan. 1, 1926, to stockholders of record Dec. 21 and the regular quarter dividend of 1¾ per cent on 7 per cent preferred stock was ordered paid on the same date by the board of directors Oct. 29. India's net earnings for the first nine months of 1925 were $39.74 a share on common stock, according to P. C. Searles, secretary-treasurer.

Lane Moves Chicago Office

J. H. Lane & Co., Inc., factors for tire fabrics, enameling duck, drills, sheeting, osnaburgs and special constructions, with general offices at 250 West 57th St., New York, recently removed their Chicago office from 223 W. Jackson Blvd. to a new office building at 323 South Franklin St. C. M. Puhlman is in charge of the Chicago office.

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THIRD SURVEY SHOWS LARGER TIRE STOCKS

(Concluded from Page 113)

Assuming these statistics for casings and inner tubes to be 75 per cent complete for the entire American tire industry and raising them to 100 per cent, manufacturers' stocks on October 1, 1925 appear to be about 1,674,000 casings and 1,685,000 inner tubes larger than on October 1, 1924. Manufacturers now hold about 10,000 more solid and cushion tires than a year ago. Consideration of these facts should be valuable in connection with planning tire production during the coming six months.

1.75 *Tubes for Each Casing*

A comparison of the average total casings per dealer with the average inner tubes per dealer shows that in the present survey, the average dealer was carrying 1.75 tubes for each casing, as compared to 1.49 tubes for each casing a year ago. Individual dealers might find it worth while to compare their own stocks with this average and then see how the ratio holds in the total returns from dealers in their States, shown in the report by States in the table on page 3. Tire manufacturers interested in the question of whether the average stocks per dealer are high or low in particular States should also refer to this table which comprises a detailed statement showing by States in alphabetical order, the total stocks of automobile casings, the stocks of balloon casings for 20", 21", and 22" wheels, and the stocks of inner tubes, in the hands of dealers reporting on October 1, 1925. The number of dealers reporting each item from each State is shown, and also the average number of casings and inner tubes per dealer.

An examination of the following table in which the 35,331 dealers are divided according to the size of their stocks will reveal that 22.63% of the dealers had stocks of less than 10 casings each and 51.11% had stocks of from 10 to 50 tires. Taken together, however, the dealers with stocks of less than 51 casings held only 24.61% of the total casings reported. The percentage of dealers in each group and the percentage of tires reported for each group is shown in detail:

Dealers According to Volume of Stock, October 1, 1925.

	No. of Dealers	Per cent of Total	No. of Casings	Per cent of Total	Average per Dealer
Under 10	7,992	22.63	40,408	2.01	5.1
10-25	10,558	29.88	175,441	8.77	16.6
26-50	7,501	21.23	276,567	13.83	36.9
51-100	5,227	14.79	372,350	18.62	71.2
101-200	2,479	7.02	345,261	17.26	139.3
201-300	704	1.99	174,415	8.72	247.8
301-400	294	.83	103,573	5.18	352.3
401-1000	438	1.24	265,555	13.28	606.3
Over 1000	138	.39	246,580	12.33	1,786.8
Total	35,331	100.00	2,000,150	100.00	56.6

The table below, prepared from the three surveys made thus far indicates the trend of dealers' stocks during the past year. The table shows the percentage of total dealers in each of four groups, the percentage of total casings held by such dealers, and the average number of casings per dealer. There has been a steady increase in the average casings per dealer for the group having 51 to 200 casings, but the percentage of total tires reported by dealers in this group has fluctuated because of the varying percentage of total dealers falling in this class. The average casings per dealer in the group having 201 to 1000 casings has increased notably, and the percentage of total tires reported by these dealers has also increased. The average casings per dealer stocking over 1000 tires has steadily declined. The very large dealers appear to be carrying conservative stocks at present, and many small and medium sized dealers are now carrying lighter stocks than last spring. On the other hand the fairly large dealers in the 201-1000 group are on the average carrying heavier stocks now than at any time during the past year.

Table Showing Trend of Dealers Stocks

	October 1, 1925			April 1, 1925			October 1, 1924		
Casings on Hand	% Total Dealers	% Total Casings	Average Casings per Dealer	% Total Dealers	% Total Casings	Average per Dealer	% Total Dealers	% Total Casings	Average per Dealer
1-50	73.74	24.61	18.9	69.43	23.05	20.6	77.95	29.9	19.0
51-200	21.81	35.88	94.1	26.06	39.36	93.7	19.19	35.0	92.8
201-1000	4.06	27.18	502.0	4.09	23.80	363.2	2.60	18.3	351.3
Over 1000	.39	12.33	1786.8	.42	13.79	2036.2	.26	16.8	3222.1
Total	100.00	100.00	56.6	100.00	100.00	62.2	100.00	100.0	53.6

The number of dealers reporting stocks of solid or cushion tires on October 1, 1925 was 2,122, and the number of such tires reported on hand was 53,060, an average of 25.0 tires per dealer. This compares with 2,391 dealers on April 1, 1925, reporting 47,958 tires, or 20.1 tires per dealer. For October 1, 1924, 1,449 dealers reported stocks of solid tires only, an average of 21.1 tires per dealer. The following table shows the number of dealers reporting solid and cushion tires for each State, and the aggregate number of tires held by such dealers on October 1, 1925.

Numbers of Makes of Tires Handled

The following table contains summary figures prepared from the reports of 34,565 dealers who stated the number of makes of tires which they carry in stock as six or less. A comparison is made with the reports of 25,701 dealers who reported on this subject in October, 1924. The percentage of dealers reporting that they carry only one make in stock was 41.64 for 1925 as compared to 40.2 for October, 1924, and there is a decline in the percentage of dealers reporting two, three, four, five, and six makes in stock, respectively.

It would appear that the trend is still toward specialization on a single make, which is quite in line with good merchandising policy, especially since most makes are produced in several qualities with different price levels. The gains to the dealer through specialization are (1) increased rate of turnover, due to greater concentration of sales effort on fewer items, (2) decreased capital investment in stock and decreased storage space required, (3) fresher stock with less deterioration, and (4) decreased handling and overhead expenses; all of these gains combined enable the dealer to do a greater volume of business on the same working capital and thus tend to increase profit. The manufacturer ordinarily gives more advertising and other support to the dealer specializing in his line. Unless the increased service of the dealer to the customer from carying a diversified stock is financially profitable, the carrying of several makes is not economically justifiable. Over 78 per cent of the dealers reported not more than two makes of tires in stock on October 1, 1925, indicating a relatively high degree of specialization.

In addition to the above, 327 dealers indicated that they stocked more than six makes, but since there frequently appeared to be a discrepancy between such a statement and the size of their stocks, it has been felt that many such replies were due to misunderstanding. At any rate the percentage of dealers stocking more than six makes is insignificant.

Summary of Dealers Reports--Number of Makes of Tires Handled

	October 1, 1925 No. of Dealers	Per cent of Total	October 1, 1924 No. of Dealers	Per cent of total
One make in stock	14,392	41.64	10,338	40.2
Two makes in stock	12,626	36.53	9,564	37.2
Three makes in stock	5,218	15.10	3,911	15.2
Four makes in stock	1,609	4.65	1,262	4.9
Five makes in stock	524	1.51	450	1.8
Six makes in stock	196	.57	176	0.7
	34,565	100.00	25,701	100.0

The following specific questions were asked of all dealers reporting: 1. Do you operate a tire repair department? 2. Do you operate an air compressor? 3. Do you operate a solid tire press? 4. Do you sell automobiles? 5. Do you sell auto accessories? 6. Do you sell gasoline? 7. Do you sell tire repair materials?

A comparison of the total affirmative replies received in answer to these questions with the total numbers of reports received from all States, is shown below for October 1, 1925, and October 1, 1924, insofar as the questions asked are similar.

Analysis by Types of Business

	Oct. 1, 1925 Number	Per cent of Total	Oct. 1, 1924 Number	Per-cent of Total
Total reports received	36,797	100.00	27,480	100.00
Operate tire repair departments	10,686	29.0	†	†
Vulcanize tires	†	†	3,734	13.6
Operate air compressor	19,772	53.7	†	†
Operate solid tire press	881	2.4	†	†
Sell automobiles	14,335	39.0	10,768	39.2
Sell auto accessories	28,651	77.9	21,917	79.7
Sell gasoline	27,562	74.9	*21,555	*78.4
Sell tire repair materials	24,173	65.7	†	†

(*In 1924, this question was "do you sell gas or oil?"

†Question not asked).

While about 24% of all dealers operate solid tire presses, over 40% of the dealers with stocks of solid or cushion tires appear to have such presses.

Revision and Safeguarding

Safety Devices Should be Both Strong and Simple in Construction but Should Not Interfere with Operation

By Ernest W. Beck

Supervisor of Safety, U. S. Rubber Co., N. Y.

ENGINEERING Revision and Mechanical Safeguarding" is a subject on which very little has been written. This is in contrast to what has been done in this direction, because for some time the larger corporations have been working quietly, endeavoring to improve their standards.

Several years ago the company which I represent, had printed and distributed to each of its factories a book of standards intended to be used as a guide not only for safe practices but also for the construction and installation of safety guards and devices. It was intended to overcome all differences of opinion as to which method was best to adopt. In setting the standards the laws of the various states were taken into consideration. This book of standards was not complete and, for that reason, was made up in loose leaf form, so that additional standards could be added as they were adopted. This served our purpose for several years, but due to the rapid strides that were taking place in the rubber industry, our central safety committee concluded that it was advisable to revise our safety standards and bring them up to date.

First we drew up a list of the subjects we wished to revise among our Safety Engineering Standards. This very act made us realize the enormous task we had before us, and that it would take several years to complete the job. Consequently we arranged our subjects according to their importance and selected those needing the most immediate attention. Next, we appointed several sub-committees from the engineers within our company. These gentlemen worked together in the revision of our different Safety Standards.

Among our first subjects were Mills and Calenders, Electrical Equipment Safety Standards, Boiler Room Safety Standards and Engine Room Safety Standards. When the standards were in a tentative form they were edited by some of our factory engineers, not members of the sub-committees, and having more than fifty factories in our company and a total of over 40,000 employees, we were in an excellent position to get the advice and counsel of a great many men experienced in the rubber industry. Finally our revised standards, before being adopted as standard procedure for the company as a whole, were officially approved by the Central Safety Committee, made up of our Safety Engineers, and the Manufacturing Committee, composed of our general factory managers.

Protest Adoption of State Code

After making considerable progress in this revision, we were confronted in one instance with what was apparently a duplication of effort. We had practically completed our Safety Standards for Mills and Calenders when it came to our attention that one of our leading states in accident prevention was about to adopt a tentative state code covering Mills and Calenders in the Rubber Industry. Inasmuch as our company had several factories in this state, we naturally were very much concerned, especially since the suggested tentative code was not in accordance with our ideas.

Feeling that some of the requirements in this code were practically impossible to comply with, we vigorously protested, for we realized that if this tentative code was set up as a State Code it would not be long before other states would consider adopting similar codes. Faced with this situation, arrangements were made to have this entire subject come up for discussion at the annual meeting of the Rubber Section of the National Safety Council in Buffalo in 1923. The meeting was very well attended by representatives of the Department of Labor of several states and delegates from all the large rubber companies and representatives from concerns manufacturing rubber machinery and equipment. This meeting was planned as a morning session but on account of the important factors which came up for discussion, it turned into an all day performance.

The following November a meeting of the Executive Committee of the Rubber Section was called in New York and among other things it discussed this problem. Sidney Williams suggested that he, as Chairman of the Correlating Code Committee of the American Engineering Standards Committee, be asked to submit our problem to the American Engineering Standards Committee, and if there was a demand for a National Standard Code on this subject, the American Engineering Standards Committee could appoint sponsors. This was done, with the result that the A.E.S.C. appointed the Rubber Section, N.S.C. and the International Association of Industrial Accident Boards and Commissions as sponsors for a Safety Standards Code for Rubber Manufacturing Machinery.

The A.E.S.C. recognizing the necessity of a standard practice in the safeguarding and quick stopping of machinery used in the manufacture of rubber goods, received with favor the recommendation of the Correlating Code Committee that a standard safety code covering this field be drafted. The pursupervising authorities, as well as to concerns operating or manufacturing machines of a similar character.

Work of Engineering Standards Committee Praised

I want to say a few words about the remarkably fine contribution which is being made in this field by the A.E.S.C. With innumerable problems coming up for solution among the hundreds of organizations interested the necessity for a clearing house immediately becomes evident. This committee is serving as a national clearing house for engineering and industrial standardization and has brought about a systematic co-operation between the organizations so vitally concerned in these problems.

In the past, in our principal industries, individual firms worked up their own standards or a Standard Code was worked up wholly within a single association. As a result other organizations and their members having no direct knowledge of, or sense of participation in, the initiation or development of such a standard, were prejudiced against its use, however good it might be.

As a contrast to this method I understand that there is today among the membership of the A.E.S.C. more than 160 national trade associations and nearly 100 other national organized groups, technical, industrial and governmental, with a total of about 1,500 individuals working on sectional committees, all participating in the work of the A.E.S.C. Up to date about 70 standards have already been approved and more than 100 other projects are under way.

Take as an illustration some of the important pieces of work that have been done by this committee. The completion of the standard for screw threads was to my mind an outstanding achievement because of its vital interest to practically every industry. The application of this standardization to fire hose couplings, now in the course of development for many years, has been of utmost important. The former lack of uniformity in such equipment has been shown in a very startling way by an exhibition of a collection of 600 sizes and variations of fire hose couplings. In the past when outlying communities have called on neighboring cities and towns for assistance to put out fires, when the visiting fire department

Delivered before the A B C Section of the National Safety Council at its Fourteenth Annual Safety Congress, Cleveland, Sept. 28 to Oct. 2, 1925.

arrived, it was often found that their hose couplings would not fit, making it impossible for them to use their equipment.

The complete standardization of all bolts and nuts commonly used in the United States is already in view. This is so far reaching that it involves a recommendation that a general International Conference should look towards an agreement which will make possible international interchangeability in regard to wrenches, nuts and bolt heads.

Technical standardization is playing a very important part in the safety movement. About 40 codes, most of them applicable to factories, are now either completed or in the course of progress. As for example, the woodwork safety code covers not only hazards at the "point of operation" in woodworking machinery, from the crude lumber to the finished product, but it also deals with plant layouts, machines, equipment and operating rules.

Progress is being made on a code for traffic signals. Those who are their own chauffeurs realize the importance of such a code. This is especially true when we drive into a strange city or town and find signals and rules that we have never seen or used before.

To me the most important feature of these national standards is that before they are approved as a Standard Code they are passed on by practically the entire personnel which makes up the membership of the American Engineering Standards Committee. This common agreement insures wholehearted co-operation.

From an international point of view, I believe we are leading the way as regards standardization and engineering revision and (unless we want to follow them) it is well that we do so, for some of our foreign friends have a few standard codes already approved and a large number of projects under way.

I believe there are nineteen leading industrial countries today that have found it necessary to establish national standardizing bodies and practically all of these have been organized during or since the war. So while there has been very little written on the subject of Engineering Revision, we are well under way in reviving and revising our Engineering Standards.

Mechanical Safeguards

When the committee was formed to draw up the Code for Rubber Machinery, it first selected from the broad scope which it was given, the important problem of safeguarding mills and calenders at the point of operation.

Readers who are familiar with this type of machine, with its very large and heavy inrunning rolls, know how difficult is the problem of proper guards. Years ago many of the rubber mills were run without any mechanical safeguard to assist in stopping the individual mill in the event that someone should get caught in the bite of the rolls. In those days there was not the production that we have today and consequently there were fewer mill operators and fewer mills, in some cases the mill men would work in a room all alone, and the stories of the "good old days" are sometimes rather hairraising. I have been told by some of our old-timers in mill rooms, of cases where men have gone completely through the rolls with no one knowing about it until remnants of clothing were found in the mill pan. And mill room men foremen will cite instances where the entire length of a man's arm would run in between the rolls of a mill or calender before someone would grab a crow bar, a wedge or a piece of steel and throw it into the gears and wreck the machine in order to stop its travel. I am glad to say that such conditions do not now exist.

In most cases today our rubber machinery is driven in units of so many machines to a line. The safety stopping devices are usually of the magnetic clutch and brake type so that the entire line may be shut down by tripping the safety device at any machine. Let us consider for a moment what has brought about this very desirable change. Take the rubber mill as an illustration. The very nature of the operation makes it practically impossible to place a guard at the point of operation. The inrunning rolls have to be exposed in order to feed the mill with rubber and compounds. After a few sad experiences, management found out that instructing the workmen to be careful on mills and calenders was not sufficient. The loss of a hand or an arm in many cases was not due alone to the carelessness of the injured. Management realized that they also had a responsibility to their employees to equip their machines with proper mechanical safety devices. Today in every modern rubber factory, mills and calenders are equipped with mechanical or electrical safety tripping devices, so that is is possible for a calender or mill man who might get caught in the bite of the rolls to stop the machine within a few inches of travel after the safety has been tripped. This mechanical tripping device in some cases is so arranged that it can be easily operated by the workman striking it with his head or hand. It operates with either a push or pull motion and causes the power to be shut off and applies the brake, which may be mechanically or electrically operated. A little later on, I am going to have thrown on the screen a few lantern slides illustrating some mechanical safeguards.

Some General Principles

There are a few general principles which apply to mechanical safeguards in addition to affording the maximum protection.

1. They should not interfere with the operation.
2. They should be strong enough to withstand not only wear and tear but also abuse.
3. The design should be simple and its parts easily accessible.
4. All remote control apparatus should be inspected daily and kept in good working order, so that it may be depended upon in case of an emergency.
5. The workmen should be thoroughly familiar with any remote control apparatus and they should take turns in shutting down the machinery each day by operating the safety stop.
6. Wherever practicable electric safety stops should operate on a normally closed circuit, so that when the circuit is broken the stop cannot be reset and it will be necessary to make an investigation to determine why the circuit was broken, or if the safety stop is out of order, to make the necessary repairs before the driving mechanism can again be started.

Consider the human problem involved. Regardless of how good your mechanical safeguard may be, your operators of hazardous machines should be selected for their fitness as regards quick perception and appreciation of the hazard. They should have good vision, resistance to fatigue and an interest in the performance of their duties. Beginners should receive thorough instruction and training before being permitted to operate a hazardous machine and if they show no special aptitude for the work, they should be assigned to another job where there is no machine hazard. Only authorized and experienced persons should be permitted to operate hazardous machines.

Stop Buttons Not Sufficient

I have had a few arguments with engineers who think that because a mill, calender or windup is equipped with two or three stop buttons, the operator is sufficiently protected. Imagine if you can, your state of mind when your right hand is being pulled into the bite of calender rolls? Is it a simple matter to think to reach out with your left hand and place the tip of your finger on a stop button that is not more than one inch in diameter? I believe it is expecting too much of any man under the circumstances. Suppose he should do the natural thing and grab his arm with his free hand to try to pull it out and get both hands caught. I have known this to happen and the man lost both arms. The management at the plant where this happened saw to it at once that proper safeties were installed and would you believe it, the workmen found all kinds of fault with the safety device and said that they did not want the machines guarded. It was necessary for the factory manager in this case to tell them *distinctly* that the guards were going to stay on the machines whether the men stayed or not. Both the men and guards stayed, and the guards have not been removed in over five years. During this time not a man has been caught in the bite of the rolls. Consequently today you could not get any of those same men to work at these machines without those selfsame guards.

(*Concluded on Page* 128)

Modern Compounding Ingredients

Properties and Uses of Several Additional Well-Known Rubber Softeners and Pigments

*By John M. Ball**

PART II

"Hard Hydrocarbon," "Thermatomic Carbon" and "Dixie" Clay

In our last issue Mr. Ball discussed the properties and uses of "Tuads" (Tetra-Methyl-Thiuram-Disulphide) and Super-Sulphur No. 2. The series is concluded in this issue with a description of the qualities and advantages of three other widely-used compounding ingredients.

(The Editor)

(C) "Hard Hydrocarbon"—Mineral Rubber

MINERAL RUBBER is one of the oldest and best diluents and softeners for rubber, and is made from oxidation products obtained from the distillation of skillfully blended asphaltic bases. After exactly the right amount of blowing, the liquid mass is run out into cool sheet-iron drums and solidified.

There are only four criteria by which to judge the quality of Mineral Rubber:—

1. It should have a reasonable price.
2. It should mix readily and thoroughly with rubber.
3. It should be clean and uniform.
4. It should age well in rubber.

"Hard Hydrocarbon" meets these conditions, and is a standard, popular grade showing excellent aging. Furthermore, the relation between its hardness and melting point has been carefully worked out so as to give the best mixing characteristics.

Two properties generally specified on a Mineral Rubber are its melting point (or softening point) and its penetration, as these are related to its behavior in mixing. The standard method for the determination of this melting point is the Ring and Ball method described in Serial D26-24 of the American Society for Testing Materials, from which pamphlet the first paragraph is quoted as follows:—

Softening Point Must be Determined

"The softening of bituminous materials generally takes place at no definite moment or temperature. As the temperature rises, they gradually and imperceptibly change from a brittle or exceedingly thick and slow flowing material to a softer and less viscous liquid. For this reason the determination of the softening point must be made by a fixed, arbitrary and closely defined method if the results obtained are to be comparable."

The melting point should not be too high as this frequently means slow and perhaps lumpy and non-uniform mixing.

The penetration of a Mineral Rubber or bitumen is the distance in hundredths of a centimeter that a standard needle will penetrate into it vertically at 25° C. (77° F.) under a load of 100 grams applied for 5 seconds. The standard method is described in Serial D5-21 of the American Society for Testing Materials. Thus a high penetration indicates a material that is soft at room temperatures. If it is too soft it will naturally be sticky and difficult to handle.

"Hard Hydrocarbon" has a melting point of 300° F. (149° C.) by the Ring and Ball method and a penetration of 5. By a method known as the Cube method, "Hard Hydrocarbon" has a melting point of 315° F. (157° C.).

Although the above tests are important it is necessary to spend very little time on the technical side of Mineral Rubber. In fact, probably the less said about its technical properties (aside from their facilitating its efficient factory working) the better, because there has been a good deal of confusion on this point, and people have tried to point out the wonderful tensile strength, toughness, and durability, imparted to rubber compounds by Mineral Rubber by virtue of its melting point, often claimed to be unusually high. We believe there is no truth whatever in such claims, and repeat that the only points to be considered in a Mineral Rubber are the four mentioned above.

Furthermore, the accurate determination of the melting point and the penetration of Mineral Rubber is difficult for any but an expert, and the average chemist is apt to be misled in making his determinations unless he is accustomed to the procedure. The same general remarks apply to the figures for the solubility of Mineral Rubber. They do not help a rubber man very much in his every day use of this material.

The mixing of Mineral Rubber is generally best accomplished by first throwing the weighed lumpy material on to the open mixing rolls to mash the lumps into a thin brittle cake and then by throwing this cakey material on to the rubber and reclaim which is being broken down, before the pigments or fillers are added. If the Mineral Rubber is added at the very end of the mix, it does not always distribute itself uniformly because the mix being soft exerts no pressure upon it.

The amounts of Mineral Rubber to use for various purposes are indicated by the suggested mixings or formulas found at the close of these descriptions but a few general remarks will here be made. The use of Mineral Rubber should be practically universal in all compounds that are dark in color, or gray, or even tan. The amounts to be used are roughly as follows:—

High-grade compounded stocks	3%
High-grade pure gum stocks	5%
Medium grade compounded stocks	10%
Medium grade frictions	10 -15%
General cheap stocks	20 -30%

Curing with ultra-accelerators at low temperatures, unusually high amounts of Mineral Rubber may be used in high grade stocks. This point will be taken up under the discussion of our "Tuads" accelerator.

To conclude—one of the most attractive properties of Mineral Rubber is its light gravity. It will also help to prevent bloom in the finished goods. It cannot be too strongly emphasized that Mineral Rubber is essential in producing low cost, easily run mixes.

(D) "Thermatomic Carbon"

This material is the newest high-grade compounding ingredient and the one of most importance since clay. Its large commercial possibilities were first correctly seen and first successfully developed by the well-known physical chemist, Dr. E. B. Spear, who was at the time head of the research department of one of the large American tire companies. Dr. Spear is now in charge of the technical control and development of "Thermatomic Carbon."

Although "Thermatomic Carbon" is made from natural gas it is not at all like ordinary channel carbon black because the principle of its manufacture is entirely different. Instead of the gas being burned with a smoky flame which is allowed to impinge on a cool surface from which the deposited carbon

*R. T. Vanderbilt Co., New York.

is scraped, the gas is not burned at all, but is heated in a furnace to a very high temperature in the absence of air, with resulting decomposition into carbon and hydrogen. The carbon is carried away in the current of gaseous matter and bagged, and the hydrogen is caught and used for heating the furnace. The yield of carbon by this method is greater per thousand cubic feet of gas than by the channel process and, therefore, the cost is lower than that of channel black.

Instead of being a jet-black pigment that is bulky and flies about in the air, "Thermatomic Carbon" has a dark gray color, an apparent specific gravity two and one-half times that of uncompressed gas black, and does not fly about nearly so readily as any of the grades of gas black, whether compressed or not. In addition to these differences, "Thermatomic Carbon" does not have the peculiarly characteristic stiffening effect on rubber that gas black has, either in the cured or uncured state. In other words it is not a carbon black at all and should never be considered as such by the rubber man. Neither does it retard cure as does gas black. What it does do is to mix in very readily with rubber, and produce a soft mix both cured and uncured. Whereas a convenient master batch with channel black consists of one part of black to two parts of rubber, a similarly convenient mix consists of three parts of "Thermatomic Carbon" to one part of rubber. The only point in common the two materials have is that they both give high tensiles. The difference between the two materials is probably explained by the "Thermatomic Carbon" particle's being round and smooth instead of irregular and jagged.

"Thermatomic Carbon" is Not a Substitute

The facts are that "Thermatomic Carbon" is a new and individual ingredient which can be used on its own merits without having to be considered as a substitute for any other ingredient. If, however, a comparison must be made between "Thermatomic Carbon" and another material, we should say that the one it is most nearly like from the standpoint of a reinforcing pigment is zinc oxide. That is to say, if "Thermatomic Carbon" is allowed to replace zinc oxide volume for volume in a compound containing considerable zinc as a toughener, the stress-strain curves of the two stocks will lie very close together.

The specific gravity of "Thermatomic Carbon" is 1.75, the same as that of gas black. The material runs so uniform that it is really not necessary to test different shipments for quality. The benzol extract and the ash are at a minimum and have been found to be entirely without effect on rubber.

The value of "Thermatomic Carbon" in rubber is due to the following special considerations:—

1. The high tensile strength and toughness it imparts to rubber.
2. Its low volume cost.
3. Its good mixing and running qualities in the factory.
4. Its splendid aging properties.

That the addition of "Thermatomic Carbon" does actually improve rubber is made clear by the tests below on the following compounds.

	A	A-1	A-2	A-3
Pale Crepe	100	100	100	100
Zinc Oxide	3	3	3	3
Sulphur	4	4	4	4
"Tuads"	3/16	3/16	3/16	3/16
"Thermatomic Carbon"	—	5	10	20

	15 MIN. @ 20 LBS.		30 MIN. @ 20 LBS.		45 MIN. @ 20 LBS.	
	Tensile @ Break	% Elong. @ Break	Tensile @ Break	% Elong. @ Break	Tensile @ Break	% Elong. @ Break
A	2680	825	3450	770	3130	765
A-1	3480	795	4160	770	3740	730
A-2	3930	750	4235	735	4060	720
A-3	4250	735	4400	730	4300	715

Taking for example the thirty minute cure you will see how the tensile strength gradually increases with increasing amounts of "Thermatomic Carbon" with but little decrease in the per cent elongation. Such improvement is accomplished economically for although the volume cost of the "Thermatomic Carbon" is higher than that of clay, it is less than that of carbon black, and considerably less than that of crude rubber and zinc oxide.

We have mentioned that "Thermatomic Carbon" does not stiffen appreciably. In fact, in the uncured state it is actually a softener. Take for example a volume replacement of zinc oxide by "Thermatomic Carbon" in a tire tread. The new compound will mix and tube somewhat more readily than the old one. This is, of course, especially true when some reclaimed rubber is also present. It is, however, particularly in friction and skim stocks that these softening qualities are most worthwhile, for "Thermatomic Carbon" allows such stocks to penetrate cotton duck and cord fabric with ease, and it allows a pure gum calendered sheet to hold its gage.

Principal Uses

The principal uses of "Thermatomic Carbon" in rubber are as follows:

Tire Treads. "Thermatomic Carbon" is used here to replace some zinc oxide on a volume basis, but not to replace carbon black. About 5% of zinc oxide should be left in the compound. "Thermatomic Carbon" can be used here similarly to "Dixie" Clay or in conjunction with "Dixie" Clay but since "Thermatomic Carbon" is not a stiffener like clay, a rather high amount of carbon black should be present. Since twenty pounds of zinc oxide have a volume equal to that of nine pounds of "Dixie" or six pounds of "Thermatomic Carbon" the skeleton tread formula above given in the description of "Dixie" might be changed to the following:

	A	B
Rubber	55	55
Carbon Black	15	15
Zinc Oxide	5	5
"Thermatomic Carbon"	6	3
"Dixie" Clay	—	4.5

Tire Side-Walls. The problem here is similar to that in treads, but not quite the same, because a side-wall should have if possible greater flexibility than a tread. Therefore, a higher amount of "Thermatomic Carbon" may be used; some zinc and possibly a little carbon black may be replaced.

Tire Carcass Stocks—Frictions, Skims, and Cushions. For years there has been no competitor of crude rubber itself for use in high grade frictions, for the reason it is generally believed and rightly so, that such stocks should be very flexible, and not at all stiff, so as not to generate more heat than necessary while in service. When crude rubber is high in price, however, the tire manufacturers naturally look about for something that will maintain high quality and at the same time make them a worth while saving; and the present moment is a good one to consider "Thermatomic Carbon" here from this point of view, because for the average tire manufacturer the increase in his cost for this year's crude rubber over that for last year's will more than equal his 1924 net profit. The compounding of the carcass of a tire has until recently been absolutely unattacked for the reason that nothing had been found that could be conscientiously used to replace some of the crude rubber. There is no doubt that "Thermatomic Carbon" is a satisfactory material for this purpose. The fact that it gives unusually high tensiles and friction pulls without stiffening the compound unduly adapts it ideally to this use, and actual road tests have shown that the results are excellent. In the highest grade carcass stocks use from 5 to 10% and in cheaper stocks 10 to 20%, with some Mineral Rubber in each case.

Air Bags. "Thermatomic Carbon" is used here in very much the same way as is "Dixie" Clay. It costs a little more but produces a snappy flexible bag that will stand a lot of physical abuse in the factory.

Inner Tubes. The same reasons that make "Thermatomic Carbon" good in carcass stocks make it good in gray inner tubes, and it should be used in about the same amounts. The resulting tubes are of high tensile, very resilient and snappy, and age extremely well.

Conveyor Belt Covers. "Thermatomic Carbon" is good here just as it is in tire treads.

High Test Belt Frictions. There is always a big demand for belts with a high friction test, and "Thermatomic Carbon" is the ingredient to use along with Mineral Rubber, cured with a suitable accelerator.

Steam Hose. "Thermatomic Carbon" here gives soft, rich stocks of high durability.

Footwear. The highest grade footwear contains "Thermatomic Carbon" both in the uppers and in the soling, giving results far superior to those given by whiting. The stocks are easily run, and have high tensiles and excellent aging properties.

Hard Rubber. "Thermatomic Carbon" can be used to replace to some extent the more expensive and much less uniform hard rubber dust. It gives quick cures and good molding properties.

(E) "Dixie" Clay

This well-known reinforcing pigment is prepared from carefully selected material occurring naturally in the extensive deposits of South Carolina. These deposits were favored by Dr. Somerville after he had made an extensive study of clay from all parts of the United States, and from Canada and European countries as well. The drying and grinding operations are especially thoroughly conducted with the most modern machinery, the clay being heated in the dryer to a high temperature, and ground and bagged while hot, so that the ultimate moisture is only about ¼ of 1%. During transit by water the clay will increase in moisture somewhat but not enough to be noticeable in the factory.

The chemical analysis of a clay has nothing whatever to do with its behavior in rubber.

The distinguishing feature of "Dixie" Clay is that it is what is known as a "hard" clay, and, therefore, gives superior tensile strength, stiffness, and abrasive resistance to rubber to that given by softer clays. It is the lowest priced high grade reinforcing pigment in use today for the compounding of rubber and is considered one of the most interesting developments since carbon black. Its volume cost (the product of its pound cost and specific gravity) is normally only about one-seventh that of crude rubber and zinc oxide, and one-half that of carbon black. Its specific gravity of 2.6 is slightly less than half that of zinc oxide.

Clay is a slight retarder of vulcanization and, therefore, the cure on a compound containing it, particularly one that has to withstand abrasive wear should be on the "over" side rather than on the "under." For this purpose enough sulphur must be used and certain accelerators should be avoided. Thiocarbanilide and "Super-Sulphur No. 1" are not much good with clay, and "Tuads" is retarded by it when it is the only accelerator, except in cases where "Tuads" is used as a vulcanizing agent. If, however, a combination of "Tuads" and di-phenyl-guanidine or di-ortho-tolyl-guanidine is used, all retardation is overcome. On the other hand, clay cures very well with hexamethylene-tetramine, di-phenyl-guanidine, di-ortho-tolyl-guanidine, "Super-Sulphur No. 2," and some other organic accelerators as well as with the usual inorganic accelerators.

Uses of "Dixie" Clay

The principal uses for "Dixie" Clay are as follows:

Tire Treads and Side-Walls. In a high-grade tread when properly compounded with carbon black, "Dixie" may replace Zinc Oxide volume for volume (exclusive of the zinc required to activate any organic accelerator that may be present), and will give equal wear with the old compound. That is to say, supposing a tread formula calling for 55 parts of rubber, 15 of carbon black, and 25 of zinc,—15 parts of this zinc may be replaced by an equal volume of "Dixie" Clay (approximately 7 parts), so that the new skeleton formula would read rubber 55, carbon black 15, zinc oxide 10, "Dixie" Clay 7. Very large amounts of "Dixie" are used in treads both competitive and high grade. An additional feature is that clay facilitates the running of a compound in a tubing machine.

Tire Beads. There is no pigment superior to this clay for use in beads up to 25-30% by weight of the compound. This is because the clay in addition to being inexpensive allows the compound to be readily tubed or forced, and at the same time cures up hard, stiff, and tough. It has replaced large amounts of higher priced materials in bead stocks.

Air Bags for Curing Tires. This was one of the first articles to contain "Dixie" and its use is most satisfactory. It gives a bag of proper stiffness, heat resisting and aging properties and is inexpensive.

Conveyor Belt Covers. "Dixie" is good here for the same reasons it is good in tire treads.

Long Length Braided and Molded Hose Tubes. Clay stiffens not only cured rubber but also uncured, and is, therefore, invaluable in braided hose tubes to stiffen the uncured tube sufficiently so that it does not collapse while being braided.

Steam Hose. The stiffness given a compound by "Dixie" makes it peculiarly resistant to the softening action of steam. Clay is an excellent ingredient for steam hose in amounts even as high as 30%.

Heels. It would be difficult to get along without clay in heels. Frequently some whiting is used in conjunction with "Dixie" as whiting mills in more readily and the combination usually gives sufficient stiffening and abrasive resistance.

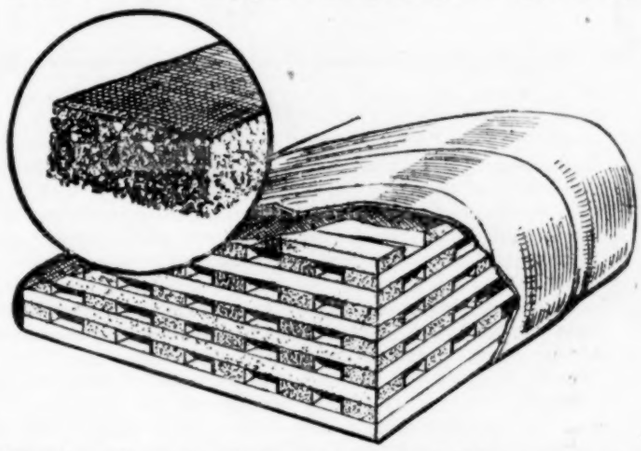
Boot Soles. Clay is naturally used here for its wearing qualities which are, of course, superior to those of whiting. It ages well, and a minor feature is that it retains the impression of the embossing calenders satisfactorily.

Oil-proof Gaskets. Owing to the close-grain given a compound by clay when thoroughly cured, "Dixie" is successful in this class of goods with high sulphur.

Miscellaneous Molded Goods. As a general cheapener and stiffener "Dixie" is often desirable as one of the main constituents of a compound of this class.

Sponge Rubber Automobile Upholstery

The substitution of pneumatic cushions for springs in automobile upholstery has already been tried with much success and recently an entirely new idea for achieving the end of insulating the passengers from road shock is upholstery of sponge rubber. According to *The Motor*, the new method which is the subject of a patent taken out by the International Rubber Mfg. Co., Ltd., St. Albans, Herts, England, consists of employing strips of best quality sponge rubber laid at equally spaced distances in the base of the cushion, the strips in the next layer being placed at right angles to those on the



Showing How the Strips of Sponge Rubber are Built Up in the Cushion

bottom one. The third layer is laid in similar manner to the bottom one, and so on until the structure it built up, a sheet of sponge rubber being used over the uppermost layer. Any sort of external covering—leather, Bedford cloth, etc.—can, of course, be used

The extra weight entailed in this method of upholstery is negligible, although it is naturally somewhat more expensive. On the other hand, the additional cost is offset by the greatly increased comfort available. The worst irregularities in the surface are damped out to such an extent that none of the actual shock transmitted by the chassis is felt. Almost the softness of a down cushion is imparted, and the occupants, while sinking into the upholstery, have freedom of movement. Restful support is also given to the legs, and there is no feeling of instability, even when one sits on the edge of the cushions.

Revision and Safeguarding

(Concluded from Page 124)

Recently I was talking with the engineer from our reclaiming plant in Manchester, England, and after telling him how we were endeavoring in this country to devise quick stopping devices for our machines, he immediately came back at me saying, "Why not have an arrangement so that the workmen will not get caught in the machine?" He told me that this was the policy of the factory inspectors in England. Their point of emphasis is the prevention of the accident rather than the length of time required to stop the machinery after the man is in the mill. I believe you will agree with me that this angle of approach is one that should never be lost sight of. For is it not more important to prevent accidents than it is to make them less severe?

It is not only a matter of justice but good business; the safety of employees should be of first consideration, and the management should take its job seriously and see that workmen are provided with safe working conditions and proper equipment. I would like to impress upon those who are in charge of accident prevention that they assume the full responsibility of the job, that they dig well below the surface causes of an accident and not be satisfied with evidence that may indicate that the man was careless or that the accident was unavoidable. I have had the unpleasant task of investigating many serious accidents, and I am sorry to say that some accidents would never have happened if safe working conditions and proper equipment had been provided and used. Accident prevention, to accomplish the desired results, must have the whole-hearted support of the entire organization and management must be willing to back up their good intentions financially, without quibbling over minor expenditures.

Efficiency and safety go hand in hand. Neatness and order are the first essentials of safety as they are of efficiency. I believe that a survey of our industries would demonstrate that our most efficient factories are those where the greatest attention is paid to preventing accidents. Show me a plant where your organization is doing everything possible to prevent accidents and I can probably show you a plant that is efficient in other respects.

The November, 1923, Labor Report from the Department of Labor, Washington, states that among the 41,400,000 persons gainfully employed each year about 2,500,000 meet with serious accidents causing a loss to industry of about 227,200,000 working days or a wage loss (at $4.50 per day) of $1,022,000,000. If we figure 300 days to the working year, this loss is equivalent to 757,000 men being out of employment each year—is not this a great waste in industry?

A few years ago (1921) Mr. Hoover's committee on the elimination of waste in industry in their report stated that, "For every dollar paid out by compensation insurance companies three dollars are lost somewhere between the employer and the employee."

The injured workman and his family suffer loss in immediate wages and future income, industry from idle equipment, reduced production, labor turnover and good morale.

This waste in industry of three quarters of a million men every year should challenge each and everyone of us to tackle our jobs with a determination to do everything within our power to encourage safeguards and to raise our Engineering Standards. In doing this we will assist in reducing to a minimum this loss in industry and the human suffering which it involves.

TECHNICAL ABSTRACTS

Artificial Rubber Latex

French Patent No. 580,088

In order to make an artificial rubber latex a concentrated solution of rubber in an organic solvent is mixed with an organic substance which has a solvent or swelling action on the rubber. This organic compound is at least partly soluble in water and has an emulsifying action on the rubber solution. Such organic compounds are the napthene, oleine and stearin sulphonic acids, or the salts of these acids, turkey red oil, the various phenols, alkali phenates and phenolates, aniline, chlorohydrins, glycerine and others of similar nature.

The mixture is made in an apparatus which homogeneizes the ingredients such as the colloid mill, which is now well-known in the chemical industries for preparing colloidal solids of various natures. The mixture is made with water. Then the solvent which has been employed in the process may be recovered by vacuum distillation.

For example, in this process 10 parts of the crude rubber are mixed with 90 parts of benzol and 2 parts of napthene sulphonic acid. The emulsion obtained is mixed with 100 parts of water in the colloid mill. Another ingredient added is a protective colloid. Thus it is satisfactory to employ from one to two per cent of casein.

* * *

Synthetic Resin as an Accelerator

***Le Caoutchouc et la Gutta Percha*, 1925 Pages 12588-9**

When accelerators are used, such as hexamethylenetetramine and thiocarbanilide, which are slightly soluble in water, the degree of dispersion is limited by the dimensions of the individual particles. Even when these substances are pulverized very finely, there is always an appreciable distance between the particles, which are uniformly distributed throughout the mixture.

It is therefore interesting and advantageous to employ an accelerator which is completely soluble in the rubber and consequently is found in the rubber mass in the state of a molecular dispersion. Such an accelerator is the hard resin obtained by the condensation of aliphatic aldehydes with the aid of aniline which is followed by polymerization of the substance under accurately controlled conditions. The substance thus obtained is new and its structure has not been definitely established. The resin is amorphous, friable and breaks with a conchoidal fracture and softens around a temperature of 80 degrees C. It is practically odorless, stable in air and sunlight, non poisonous and does not evolve poisonous fumes while it is being used. It acts as a plastifying agent while accelerating the vulcanization of the rubber. It is used generally in the proportion of 2.75 to four per cent of the weight of the rubber.

* * *

Resistance of Pigmented Crepe

An investigation was reported in the *Bulletin of the Rubber Growers' Association* 1924, pages 52 to 54 on the resistance of pigmented crepe rubber to atmospheric influences, particularly to sunlight. Samples of the crepe rubber which were prepared from preserved latex and pigmented respectively with one per cent of an orange lake on an alumina base, one and five per cent of carbon black and two and one half per cent of aluminum powder were exposed on a roof in the summer time.

Judged by the physical condition and the proportion rendered soluble in acetone, the samples containing carbon black were much more resistant to the effect of sunlight than the remainder, the sample with five per cent of carbon black being practically unaltered, even when the unpigmented samples began to flow. Plantation rubber was superior to crepe prepared from preserved latex.

VULCANIZATION & ACCELERATORS

By Andre Dubosc

PART II (*CONTINUED*)

Natural and Mineral Accelerators

Potts Showed by his Experiments that the Enzymes Have the Power of Decomposing Protein Matters in Rubber, with Resulting Formation of Compounds of a Phenolic Character, which Contain Oxyhydriles

IN the last installment published in the October 10 issue, Andre Dubose discussed the first conclusion derived from the experiments of Eaton and Grantham. Other conclusions follow:

2. The action of antiseptic substances, of the character of formol, when employed either in the hot or the cold, is to prevent the formation of this accelerator. When raw rubber, which has just been coagulated, is washed with running water, the same effect is produced as by the use of an antiseptic.

3. The action of formol is very slight, if not entirely nil, as far as the accelerator is concerned after it has once been formed.

4. If the freshly coagulated rubber is subjected to cryscopy, the action of accelerator is nil. If after cryscopage, the rubber is allowed to remain at a normal temperature, the gum then vulcanizes at a rapid rate.

Formation by Biological Action

5. All the experiments described in part one of this investigation indicate that the accelerator is formed under the influence of biological phenomena, probably being due to the action of micro-organisms which exert a decomposing action on the protein matters and the other nitrogeneous substances found in the coagulum. The result then is the formation of an accelerator which is a decomposition product of these nitrogeneous bodies.

6. The experiments, described in the second part of this investigation, and which are concerned with the action of protein matters and nitrogeneous substances in contact with the rubber gums and which cause slow vulcanization, lead to conclusions which conform with the conclusions derived from the experimental results obtained in the first part of the investigation. These experiments show that the protein matters in the pure state have a distinct accelerating action on vulcanization but only react with the ingredients of the rubber mixture after decomposition has set in.

Experiments with Non-Decomposed Serum

7. The experiments carried out with serum, in the non-decomposed condition, after the protein matters had been precipitated, gave a number of results which led to the supposition that there must exist in the rubber latex a second substance which is possessed of accelerating power.

8. As far as the experiments made with a number of samples, which the authors called, slab rubber, and which were obtained by evaporating the water in the latex and obtaining in this a rubber which contains all of the solid matter originally present in the latex, it may be concluded that it is possible that the two accelerating substances act at one and the same time, and that it is necessary to attribute to the second substance, the second factor in the vulcanizing process, the augmentation of the resistance to rupture of the vulcanized product manufactured in this manner.

It appears as if this state of affairs is to be found with rubbers of low quality, to which may have been added the following substances, one, products obtained by the decomposition of the protein matters, and two, products obtained from the evaporation of the latex serum, after the rubber itself and the protein matters generally found in admixture with it have first been removed. The samples obtained by vulcanization of raw rubber mixtures containing the substances listed in the second of the two cases, just outlined, gave results on testing for resistance to rupture which were superior to those obtained from the vulcanization of rubber mixtures containing protein decomposition products.

9. The results of experiments carried out with evaporated rubber latex serums, which mixtures contain at the same time protein matters and other impurities which are present in the rubber latex, confirm the existence of another accelerating agent in the rubber latex.

10. The experimental results obtained from the third part of this investigation are such as to give reason to believe that the second accelerator is not a substance that contains nitrogen.

11. The same experimental results also showed that it was not possible to establish any other relationship between the nitrogen content of a rubber and the rapidity with which it vulcanizes, for the rapidity of vulcanization can very readily be increased by substances which contain a high proportion of nitrogen as well as by those which contain a low percentage of this element.

Character of Protein Decomposition Products

Now, as far as the character of the products obtained by the decomposition of the protein matters and which effect acceleration is concerned, if the work done by Effornt on this subject is studied, it will be seen that it is almost possible to say that the substance in question and the one which affects the acceleration of the rubber is a product formed by the coupling of protein matters and for that matter more than likely a product formed from an amine base.

Eaton and Grantham have also tried to isolate the second accelerator, whose presence had been noted by these investigators in serum of rubber latex, which substance has for its principal property the quality of being able to increase the resistance to rupture of rubber which has been vulcanized in admixture with the substance. Without being able to establish the exact characteristics of this substance, they have been able to show that it was due to an energetic condensation reaction, which caused a superpolymerization of the rubber molecule. It appears very likely that this substance belongs to the urea family.

The work done by Eaton and Grantham on this subject possesses greater interest and significance, inasmuch, without knowing anything at all about the work done on the same subject by Spence, whose experiments has as yet not been made public, these investigators not only indicated, as did Baretem, Beadle and Stevens, the importance of protein matters in the

acceleration of vulcanization, but also showed that acceleration was due only to the products obtained by the decomposition of these protein substances, that is to say truly to amine bases. Then again their investigations went one step further, for they were the first to indicate that there existed in the rubber a second substance, probably derived from the ureas and which had a sort of catalytic action on the physical constants of the vulcanized products. Thus the substances derived by the action of bacteria and enzymes on the protein matters contained in the rubber latex are accelerators in the proper sense of the word. On the other hand, the substance obtained from the rubber serum is a true vitalizer. The combination of these different substances, either in the coagulated rubber or in the rubber gums obtained from evaporation of the latex results in the formation of a true vitalizing accelerator.

It is this particular product which undoubtedly has given to para rubber, obtained from Brazil, its indisputable superiority.

Experiments with Plantation Rubber

Pursuing their investigations in a very logical manner, Eaton and Grantham undertook to apply the conclusions of their experiments and the principles derived from them to the preparation of industrial plantation rubber. In doing so they allowed the rubber to mature or ripen in the latex serum for a minmum period of six days. During that time this rubber became loaded at the same time with the products obtained by the decomposition of the protein matters which have the capacity of acting as accelerators, and also with the urea derivatives which possess the property of vitalizing agents.

The question then arises: Is the action that results in the transformation of the protein matters during the time of ripening or maturing of bacterial origin or of enzymatic origin?

The opinions expressed on this subject vary considerably.

According to Jung and Troonip and de Haas, the various types of bacteria met in the rubber latex as well as in the rubber itself does not possess the property of acting on the protein matters.

On the other hand, in accordance with the views held on this matter by other savants, *actinomyces elastica* and *actinomyces fustus* are able to decompose protein matters and the same thing is true of the Vernet bacillus. The latter bacteria possesses particularly great potency in its action on the sugars, and therefore it is altogether probable that the bacillus is able to cause a decomposition of glucosamine, which is the principal protein found both in rubber latex and in raw coagulated rubber.

Enzymatic Action on the Proteins

Then again in accordance with the investigation made by Potts on this subject, the conclusion obtained is that the reaction is more likely one of enzymatic character, and in this respect this scientist is in accord with the views held by Effront on this interesting matter.

"The enzymes," he says, "possess the power of decomposing the protein matters found in rubber, and the result of such decomposition is the formation of products of a phenolic character, containing oxyhydriles." This appears to be likely. It is more reasonable to believe that amine bases are formed which it is possible to precipitate, and definitely determine the existence of, with the aid of phospho-tungstic acid.

Up to the present time it has been impossible to tell if the decomposition of all the protein matters contained in the rubber latex and in the coagulated raw rubber was complete.

According to the investigations made on this matter by Whitby the decomposition of the rubber latex is not due to the action of enzymes. Rubber contains two types of bacteria. One of these types posesses the power to decompose the carbohydrates and to prevent the development of the other type which has the power of acting on the protein matters. Hence it is only possible after the decomposition of the sugars in the rubber latex for the decomposition of the protein matters to take place. As a final contribution to the experiments here described on the protein matters and on the rôle that they play in the vulcanization we must give a resumé of the work that was done on this subject by Stevens, which he published under the very suggestive title, "The Natural Accelerator of Para Rubber."

In the early studies that Stevens made on this subject he showed that there are certain impurities always found in the raw coagulated rubber and that their presence is essential if a well vulcanized product, posessing the correct physical properties, is to be obtained. These impurities are of two kinds. First there is a nitrogen complex, which dissolves hardly at all in benzine, chloroform and the other solvents which dissolve rubber itself. It can therefore be called the insoluble impurity. Then there are the substances which can be extracted from the raw rubber with acetone. These are the resinous matters.

Stevens showed that it is possible to substitute for the insoluble substance other nitrogeneous materials, such as the peptones, casein and even an amylaceous material, such as starch, but that these last two substances are considerably less potent than the proteins and the peptones.

The resinous substances extracted with the assistance of acetone cannot be replaced by other substances and the results that are obtained with rosin, for example, are negative.

From this fact it is possible to derive the conclusion that the active elements of vulcanization, contained in the acetoe extract, are other substances than resins.

Thus the removal of the nitrogenous matters from the rubber has the effect of retarding the progress of vulcanization, but this has no effect on the stability of the rubber either in the raw or vulcanized state.

Effect of Removal of Resins

On the other hand the effect of the removal of the matters that can be extracted from the rubber with acetone, is not only to retard the vulcanization of the rubber, particularly in those cases where the rubber is admixed with litharge, but also to reduce the stability of the rubber in rendering it more susceptible to oxidation.

Again, Stevens was able to verify the well founded observations made by Eaton and Grantham, to the effect that a rubber is obtained possessed of rapid vulcanizing properties when the raw gum is left by itself for a period of several days.

At the sametime he did not find that it made any great difference in the content of nitrogeneous substances in the rubber whether the rubber, derived from a common latex, was dried in air or with smoke, if the initial coagulant had been obtained in the same manner and when it had been left to mature for the same length of time in both cases.

"The peptones," he said, "when used as accelerators of vulcanization, have a very irregular action as compared with the natural protein matters found in rubber. Consequently their addition to a rubber, which already contains a certain proportion of nitrogeneous substances, has only a weak complimentary action on the vulcanization process."

The natural insoluble impurities found in rubber, that is the peptones and the other protein complexes, must be distinctly different from the more simple amine compounds, which are formed on putrefaction of these substances. These substances have a much more energetic action on the vulcanization of rubber.

So when these materials are added to a crepe rubber, for example, which has been prepared in the ordinary manner and which contains sufficient protein matters as are required for normal vulcanization, they accelerate the vulcanization in a very decided manner. On the other hand a complex substance, such as a peptone, has practically no action at all on the rate at which the rubber is vulcanized.

Nitrogen Complexes and Derivatives

It thus became necessary to establish in clear terms the difference that exists between the nitrogeneous complexes, such as protein matters, which are essentials as far as normal vulcanization of rubber is concerned, but which do not have any action on the physical constants of the vulcanized rubber, and the derivatives of nitrogen which are obtained by the putrefaction or decomposition of nitrogeneous matter. These decomposition products act as accelerators in the true meaning of the term, and are the only substances that possess the capability of effecting a reduction in the time required for vulcanization.

(To Be Continued)

The Market Place

WHERE TO OBTAIN

Machinery, fabrics, chemicals, compounding ingredients, crude and reclaimed rubber, consulting chemical and engineering services, etc.

ACCELERATORS—X L O and Diphenyl Guanidine.

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Textile-Finishing Machinery Co.

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CARBON BLACK–*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

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CHEMICALS

Refined Pine Tar
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Petrolatum--Burgundy Pitch.

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ACCELERATORS—A19, A7, Thiocarbanilid.

The RUBBER SERVICE Laboratories Co.

611 Peoples Savings & Trust Bldg.
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CARBON BLACK

nine grades for the rubber industry.

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Harshaw, Fuller & Goodwin Co.

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ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

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Direct Factory Representation

CARBON BLACK–*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.

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CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.

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ASBESTINE—Specially prepared for use in Rubber. Send for liberal working sample.

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CARBONEX — Increases strength and durability of any compound while reducing the cost.

The Barrett Company

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CRUDE RUBBER — All Grades. Washed - Dried - Milled. *Send us Your Inquiries.*

Gibraltar Rubber Corp.

West New York, N. J.

THE MARKET PLACE Section Continued on Second Page Following.

MARKETS

Cottons and Fabrics

NEW YORK, Nov. 16, 1925

In spite of the break of more than $5.00 a bale which followed the publication on Nov. 9 of the Government crop estimate of 15,386,000 bales, quotations at the close a few days later were appreciably higher than those recorded immediately prior to the issuance of the report. This recovery seems to indicate that the size of the crop has been discounted and that henceforth other and more important factors must be considered if reasonable accuracy in anticipating the trend of prices is to be attained.

From a close study of weather conditions during the past three or four weeks, the opinions of competent crop observers that at least two million bales will prove to be untenderable seem to be confirmed. Cotton which is unsuitable for delivery on contract may, of course, possess good spinning qualities and is sooner or later consumed by mills which are either equipped to handle it or which adjust their machinery in order to do so —an expensive and somewhat unsatisfactory operation. However, it is unlikely that the demand for the better grades of white cotton will decrease owing to the relative cheapness of the lower grades.

Manufacturers of staple goods have become accustomed to paying high prices for their raw material and the majority, with extensive forward commitments, would be adverse to running the risk of rejection by using damaged cotton. Early in the season spot merchants were reported to have made large forward sales of the better grades and it is now thought that purchases to fill these commitments will assure a good spot demand in the interior for some time ahead. The comparative scarcity of cotton grading above low middling continues to be reflected in the widening of the differentials.

The outlook with regard to consumption continues to be very promising. Spinners takings during the week ended Nov. 6 were 526,700 bales, against 347,803 bales for the same period last year. Reports from domestic cotton textile centers indicate a satisfactory distribution of goods and, although the unsettling effect of the Government report has restricted the placing of new orders, sentiment is generally optimistic. In Europe, the present price level of cotton is regarded with general satisfaction, and in view of the gradual expansion of industrial activity with its attendant increase of purchasing power, the demand for cotton goods should undoubtedly exceed that of last season, according to A. Norden & Co., New York, a large cotton facor.

New York Prices

	Open	High	Low	Close	Close Nov. 2
December	20.75	20.75	20.42	20.48	19.39
January	20.05	20.05	19.72	19.78	18.78
March	19.95	20.17	19.91	19.95	19.04
May	19.75	19.86	19.65	19.67	19.16
July	19.20	19.35	19.16	19.30	18.74

TIRE FABRICS

During the past two weeks tire fabric quotations dropped a few cents. The market has been on a trading basis with inquiries representing small quantities, yet these made for a weaker level of values. The fabric mills are continuing their large production, with only a few mills working shorter hours. Late last week inquiries totaling 4,000,000 pounds were received, with deliveries for the first half of 1926.

The Man with the Buying 'Say'— Reads THE RUBBER AGE. If you have an interesting message, he'll be sure to see it if placed in these pages.

CORD FABRICS

Combed Sakellarides		Nominal		
Combed Peeler	lb.	Nominal		
Carded Peeler		.48	@	.51
Combed Egyptian uppers	lb.	.66	@	.70
Carded Egyptian uppers	lb.	.60	@	.63

SQUARE WOVEN

17¼-ounce Egyptian uppers, combed	lb.	Nominal		
17¼-ounce Egyptian uppers, carded	lb.	.58	@	.61
17¼-ounce Sakellarides, combed	lb.	Nominal		
17¼-ounce Peeler, carded	lb.	.46	@	.49

Ducks—Irregular quotations were a feature in the cotton duck market. The orders which came to hand were unusually small, for immediate delivery and for only a few styles. Since looms are engaged to the close of the year mills have felt no incentive to reduce quotations and treat each inquiry on its individual merits.

Burlaps—A report on October burlap shipments placed the total for North America at 90,200,000 yards, of which 4,700,000 yards went to the West Coast and 6,000,000 yards to Canada. During the past two weeks there has been considerable fluctuation in quotations and the influence of speculative interests in the market was felt.

SHEETINGS

40-inch	2.50-yard	yd.	.14¼	@	—
40-inch	2.85-yard	yd.	.12½	@	—
40-inch	3.15-yard	yd.	.13½	@	—
40-inch	3.60-yard	yd.	.11¾	@	.12
40-inch	3.75-yard	yd.	.10¾	@	—
40-inch	4.25-yard	yd.	.09	@	—

DUCKS

Belting	lb.	.39	@	.41
Hose	lb.	.39	@	.41
Enameling	lb.	.41	@	.46
Shoe Ducks	lb.	.41	@	.46
Single filling	lb.	.18	@	.20
Double filling	lb.	.20	@	.21½

BURLAPS
(Carload Lots)

7½-ounce 40-inch	9.15	@	9.25	
8 -ounce 40-inch	9.60	@	—	
10 -ounce 40-inch	12.10	@	12.15	
10½-ounce 40-inch	12.40	@	—	

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

AMERICAN COTTON FABRIC CORPORATION

ALL THE LEADERS

Are represented in this section. Purchasing agents can rely on the concerns listed as thoroughly reliable in every way.

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DIPHENYLGUANIDINE
Aero Brand, product of the highest purity from dependable source of supply.
American Cyanamid Co.
511 Fifth Ave. New York City.

DRY KILN—for drying crude rubber and chemicals—Hunter Process.
Carrier Engineering Corporation
750 Frelinghuysen Ave. Newark, N. J.

ENGINEERS
Machinists, Iron and Steel Founders
Standard and Special
Rubber Working Machinery
The Adamson Machine Co.
Akron, Ohio

FABRICS—Tire fabrics, Egyptian—Peeler, Karded and Combed, Cord and Square.
Cabarrus Cotton Mills
(Cannon Mills, Inc.)
55 Worth St. New York
327 S. La Salle St. Chicago

FABRICS—Spots and Contracts: Tire Fabrics, Enameling ducks, Tube Wrapping Tapes.
H. Frank Jones
395 Broadway New York City

FABRICS—Tire fabrics—coarse builders, chafers, breakers in all grades.
New England Southern Mills
LAWRENCE & CO.
24 Thomas St. New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

FABRICS—Tire, cords, enameling ducks, drills, sheetings, osnaburgs.
J. H. Lane & Co.
250 West 57th St. New York City

FABRICS—Tire fabrics of every description, Sea Island, Egyptians, Peelers.
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FABRICS—Stockinets, Jersey Cloth and Special Fabrics for the Rubber Industry.
U. S. Knitting Co., Inc,
Pawtucket, R. I.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
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GUAYULE—"Duro" Brand washed and dried ready for compounding.
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HARD RUBBER, quality hard rubber goods of every description.
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HEEL BURRS—with central holes; flat and cupped.
J. H. Sessions & Son
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LINERS — PROCESSED
For
Various Rubber Stocks
The Cleveland Liner & Mfg. Co.
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Prompt Service—Let us quote you.
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Tire building equipment; general machine work.
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We specialize in fine Grey, Black and Red Reclaimed Rubber.
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Rubber Regenerating Co.
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THE MARKET PLACE Section Continued on Second Page Following.

Reclaimed Rubber

NEW YORK, Nov. 16, 1925

The heavy demand for reclaimed rubber continues. An index to the prosperity being enjoyed by all reclaimers is seen in the reports of several that new additions will be constructed to present factories in order that capacity may be increased to care for the constantly growing demand. Supplies of reclaimed rubber in the hands of manufacturers, as seen from the recent report of the Rubber Association, are barely sufficient to meet demands and a strong undertone prevails in the market. Reclaimers are optimistic regarding the prospects for a continuance of high crude rubber prices.

Friction (Uncured)			
No. 1	lb.	.60 @	.65
No. 2	lb.	.50 @	.55
High Tensile Black			
Super-Reclaim No. 1	lb.	.31 @	.32
" " No. 2	lb.	.17½ @	.18
Shoe			
Unwashed	lb.	.10½ @	.10¾
Washed	lb.	.13½ @	.13¾
Tube			
No. 1 (Floating)	lb.	.27 @	.28
No. 2 (Compounded)	lb.	.18½ @	.19½
Tires			
Black unwashed	lb.	.10½ @	.11
Black, washed	lb.	.12 @	.13
Black, selected tires	lb.	.12¾ @	.13¼
Dark Gray	lb.	.15 @	.15½
Light Gray	lb.	.15¾ @	.16½
White	lb.	.18½ @	.20
Truck, Heavy Gravity	lb.	.10½ @	.11¾
" Light Gravity	lb.	.12½ @	.12¾
Miscellaneous			
Mechanical Blends	lb.	.08 @	.09
Red, High Grade	lb.	.18½ @	.19

Scrap Rubber

NEW YORK, Nov. 16, 1925

The scrap rubber market is firm. Increased buying of tubes and boots continues but the movement of tires is still slow. Buying by reclaimers is going on quietly at current levels but large commitments have not been general as stocks on hand with reclaimers are large enough for immediate needs. A feeling prevails that scrap rubber prices must soon advance in sympathy with crude rubber.

Auto tire peelings		.01¾ @	—
Standard White auto	ton	35.00 @	40.00
Mixed auto	ton	24.00 @	25.00
Bicycle tires	ton	12.00 @	13.00
Clean solid truck tires	ton	45.00 @	50.00
Boots and shoes		.02¾ @	.03
Arctics, untrimmed		.01½ @	.01¾
Arctics, trimmed		.02 @	.02¼
Inner tubes, No. 1		.10 @	.11
Inner tubes, compounded		.08 @	.09
Inner tubes, red		.06½ @	.07
Air Brake Hose	ton	18.00 @	20.00
Rubber hose	ton	15.00 @	17.00

Crude Rubber

NEW YORK, Nov. 16, 1925

On the 6th inquiry for rubber improved sharply following the easier trend of the previous few days, when despite slack inquiry prices were well maintained. Buyers were in the market for all positions but sellers withdrew, again emphasizing the absence of real sellers. Some business was done in the 1926 positions which showed greater firmness, following London's lead.

Spot was up two cents a pound on the 12th, closing at $1.03 for standard ribs. There was a reasonably active market in these positions and also considerable inquiry for Jan.-March and April-June, both of which advanced about two cents a pound. The upward trend continued on the next day. Buying was brisk and although it tapered off a bit late in the day, the close found the market up from two to three and a half cents a pound, depending on position. Some interests looked for a runaway market and predictions of $1.25 rubber were heard. However, the orderly character of the buying and the fact that it was consuming demand which accounted for the strength of the market argued against a squeeze such as that of last July.

Buyers were again in the market in force on the 14th and took considerable quantities in both the nearby and the more distant positions. There was some factory inquiry covering all positions and also a demand from dealers to cover heavy factory sales. Spot ribs were held at $1.07½ at the close. November was held at 1.05 and sellers a cent higher did not appear anxious to negotiate. The market was active right up to the close and although it was Saturday, some afternoon trading was also in evidence. The feeling that next month will see some very high rubber prices gained strength.

Today the market quickly followed the lead of London and prices were marked up to new high levels, although activity was not intense. There was some further buying of standard grades, both spot and forward, but with sellers steadily advancing their ideas, buying lagged late in the day, at which time the sellers outnumbered buyers.

London stocks were reported today as 4,503 tons, compared with 4,905 last week and 35,589 a year ago.

NEW YORK MARKET

Plantations—			
Ribbed Smoked Sheets			
Spot	1.09 @		1.10
November	1.07 @		1.08
Nov./Dec.	1.06 @		1.07½
December	1.05 @		1.06
Jan./March	1.03 @		1.05
April/June	.98 @		1.00
First Latex, crepe spot	1.10 @		1.12½
Amber Crepe, No. 2, spot	1.06 @		—
" " No. 3,	1.05 @		—
" " No. 4,	1.04 @		—
Brown Crepe, Rolled	.98 @		—
" " Clean, thin.	1.00 @		—
" " Specky	.98 @		—
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.98 @		—
" Medium	.85 @		—
" Coarse	.66 @		—
Islands, Fine	.90 @		—
Acre Bolivian, fine	.96 @		—
Tapajos, fine	.86 @		—
Cut Beni Bolivian, fine	.85 @		—
Caucho Ball—			
Upper, shipment	.68½ @		—
Centrals—			
Corinto, scrap	.56 @		.57
Esmeraldo, sausage	.57 @		.58
Guayule, w and d	.52 @		—
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Kassai, Prime Red	Nominal		
Balata—			
Block, Columbia	.57 @		—
" Cuidad	.65 @		—
Surinam, sheet	.75 @		—
Gutta Percha—			
Siak	.20 @		.22
Red Macassar	3.50 @		—
Chicle—			
Mexican, Yucatan	.58 @		.68

LONDON MARKET

Standard Ribbed Smoked Sheets—	
Spot	54 d
November	54
December	52
Jan./March	50
April/June	46½

SINGAPORE MARKET*

Standard Ribbed Smoked Sheets—	
Spot	46⅝d
Nov./Dec.	46¼
Jan./March	44¼
April/June	40⅝

*The Singapore market was closed Nov. 16 and 14 in observance of holidays. Prices given are those of Nov. 13.

J. H. LANE & CO.

Tire Fabrics Cord Fabrics

Enameling Duck Drill Sheeting

Osnaburg and Special Constructions

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The Market Place

RECLAIMED RUBBER
A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"42 Years Serving the Industry Solely as Reclaimers"

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American Schaeffer & Budenberg Corp.
Berry & South Fifth Sts., Brooklyn

TIRE BUILDING EQUIPMENT
MOLDS & CORES
The Akron Rubber Mold & Machine Co.
Akron, Ohio

RUBBER—Crude and scrap, all grades.
H. Muehlstein & Co.
Liggett Bldg. New York
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SOLVENT RECOVERY EQUIPMENT
50 to 90 Per Cent Recovery
Spadone Machine Co., Inc.
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Exclusive Selling Agents for
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For Heels, Soles and Mechanical Rubber Goods.
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Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
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IXL Speed Reducers, Cut Gears, Micarta Pinions and Timing Gears, Flexible Couplings, Gear Racks, etc.
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Mills, Calenders, Grinders, Washers
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Rubber Cloth Remnants
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Locust St. Medford, Mass.

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White, brown and black.
Carter Bell Mfg. Co.
150 Nassau St. New York

STRIP CUTTING MACHINES
For cutting all rubber, composition and plain or impregnated fabrics.
Cameron Machine Co.
61 Poplar St., Brooklyn, N. Y.

WHITING & PARIS WHITE
manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
Southwark Mfg. Co.
Camden New Jersey

RUBBER SUBSTITUTES
All grades — Samples furnished.
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SULPHUR—*"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.
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All grades for the rubber manufacturer.
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ZINC OXIDES — Including KADOX and "Albalith."
The New Jersey Zinc Sales Company
New York Pittsburgh Chicago
Cleveland San Francisco

CHEMICALS & COMPOUNDING INGREDIENTS

Accelerators — Colors — M.R. — Compounding Ingredients
Softeners — Vulcanizing Ingredients — Rubber Substitutes

NEW YORK, November 16, 1925—General conditions in the market for rubber chemicals and compounding ingredients during the past two weeks were along much the same lines as previously reported. Contract withdrawals on most items have continued unbated. Prices were steady in the main, and due to strength in raw materials, some items showed a pronounced tendeney toward advances in price. The situation was said to be satisfactory on the whole, and few factors were without an optimistic view of the prospects for 1926 as far as demand from the rubber industry is concerned. The year 1925 has been a better one for most factors and manufacturers of chemicals and compounding ingredients than any experienced since 1920.

ACCELERATORS

Organic			
Aldehyde ammonia, crystals	lb.	$ .90	@ .93
Aniline oil, drums	lb.	.17	@ .17½
Di-Ortho-Tolylguanidine	lb.	1.10	@ 1.13
Diphenylguanidine	lb.	.95	@ .98
Ethylidene aniline	lb.	.60	@ .65
Excellerex	lb.	.35	@ .40
Formaldehyde-Aniline	lb.	.40	@ .42½
Grasselerator 102	lb.	.80	@ .82
Grasselerator 552	lb.	4.80	@ 5.00
Hexamethylene-tetramine	lb.	.80	@ .82½
Paraphenylenediamine	lb.	1.25	@ 1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80	@ 5.00
Super-Sulphur No. 1	lb.	.50	@ —
Super-Sulphur No. 2	lb.	.18	@ —
Tensilac, No. 41	lb.	.65	@ —
Tuads	lb.	4.50	@ 5.00
Thiocarbanilide, kegs	lb.	.25	@ .32
Triphenylguanidine	lb.	.70	@ .75
Vulcone	lb.	.75	@ .79
Zimate	lb.	5.00	@ —
Inorganic			
Lead, sublimed blue	lb.	.10	@ —
Lead, white	lb.	.10¾	@ —
Litharge, domestic	lb.	.11¾	@ .12¼
Lime, superfine	lb.	.01½	@ .02
Magnesia, calcined, light	lb.	.24	@ .25
extra light	lb.	.40	@ .45
heavy	lb.	.04	@ .06½

COLORS

Blacks			
Arrow "Aerfloted"	lb.	.08½	@ .12½
Bone Black	lb.	.05½	@ .11
Carbon "	lb.	.08	@ .12
Drop "	lb.	.07½	@ .14
Ivory "	lb.	.12	@ .45
Lamp "	lb.	.12	@ .40
Micronex	lb.	.09	@ .13
Thermatomic carbon	lb.	.05	@ —
Blues			
Cobalt	lb.	.21	@ .26
Prussian	lb.	.34	@ .35
Ultramarine	lb.	.08	@ .35
Browns			
Iron oxide	lb.	.02¼	@ .06¼
Sienna, Italian	lb.	.04	@ .14
Umber, Turkey	lb.	.04	@ .06
Vandyke, domestic	lb.	.03	@ .03½
Greens			
Chrome, light	lb.	.28	@ .30
medium	lb.	.30	@ .32
dark	lb.	.31	@ .34
commercial	lb.	.09	@ .10
Chronium Oxide, bbl.	lb.	.32	@ .33
Reds			
Antimony crimson, 15/17 F.S.	lb.	.43	@ .45
sulphur free	lb.	.46	@ .49
golden, 15/17 F.S.	lb.	.17	@ —
pentasulphide, pure,	lb.	.35	@ .38
15/17 F.S.	lb.	.33	@ .36
red sulph. 15-17F.S.	lb.	.16	@ .20
Indian English	lb.	.11	@ .15
Oximony	lb.	.13½	@ —
Para toner	lb.	.90	@ 1.00
commercial	lb.	.13½	@ .14½
Red oxide, reduced	lb.	.04	@ .12
pure	lb.	.11	@ .15
Toluidine toner	lb.	1.85	@ 2.10
Venetian red	lb.	.01½	@ .05
Vermillion, quicksilver, English	lb.	1.45	@ 1.50
domestic	lb.	.15	@ .25
Whites			
Albalith	lb.	.05⅞	@ .06⅛
Aluminum bronze		.55	@ 1.20
Lithopone, Akcolith	lb.	.05⅝	@ .06
Litnopone, Azolith	lb.	.05⅝	@ .06⅛
Zinc Oxide—American Process XX red	lb.	.07½	@ .07¾
Kadox, black label, kegs	lb.	.10⅝	@ .11¼
blue " "		.09⅝	@ .10⅛
red " "		.08⅝	@ .09⅛
American Azo: ZZZ (lead free)	lb.	.07¼	@ .07¾
ZZ (under 5% leaded)	lb.	.07	@ .07½
Zinc Oxide—French Process White seal	lb.	.12⅝	@ —
Green seal	lb.	.11¼	@ —
Red seal	lb.	.10⅛	@ —
Yellows			
Chrome, light		.18	@ .19
dark and medium	lb.	.18	@ .19
Cadmium Sulphide	lb.	1.20	@ 1.50
Ocher, French medium	lb.	.03¼	@ —
domestic	lb.	.00½	@ .02

COMPOUNDING INGREDIENTS

Aluminum Flake (f.o.b. plant)	ton	21.85	@24.50
hydrate light	lb.	.16½	@ .17
Ammonia carbonate	lb.	.17½	@ .19
Asbestine	ton	14.50	@18.50
Barium carbonate	ton	54.00	@56.00
Barium Dust	lb.	.05	@ .06
Barytes southern off-color,	ton	12.00	@18.00
Western prime white	ton	22.00	@23.00
imported	ton	27.00	@34.00
Basofor	lb.	.04½	@ —
Blanc fixe dry f.o.b. works	lb.	.03¾	@ .04
Carrara filler	lb.	.01¾	@ .02
Chalk, precip., extra light	lb.	.04	@ .04¼
heavy	lb.	.03¼	@ .04
Clay, China, domestic	ton	15.00	@25.00
Catalpo (fact.)	ton	35.00	@38.00
Dixie	ton	20.00	@35.00
Blue Ridge, Dark	ton	9.00	@ —
" " Light	ton	12.00	@ —
Langford	ton	12.00	@22.00
Glues, extra white	lb.	.20	@ .29
medium white	lb.	.18	@ .24
common bone	lb.	.11	@ .14
Graphite flake, bbls.	lb.	.06½	@ .12
Infusorial earth, powdered	ton	23.00	@25.00
bolted	ton	15.00	@20.00
Liquid latex	gal.	3.00	@ —
Magnesia, carbonate	lb.	.08¼	@ .09
Mica, powdered	ton	65.00	@80.00
Rotten Stone (powdered)	lb.	.05	@ .07
Soapstone, powdered	ton	15.00	@22.00
Starch, powdered	cwt.	3.81	@ —
Talc, domestic	ton	16.00	@18.00
Terra Alba	cwt.	1.25	@ 2.00
Tripoli, white	lb.	.02	@ .02¼
Whiting, commercial	cwt.	1.00	@ 1.15
gilder's bolted	cwt.	1.25	@ 1.35
English cliffstone	cwt.	1.50	@ —
Paris whiteAmerican	cwt.	1.25	@ 1.50
Quaker	ton	13.00	@15.00
Sussex	ton	8.00	@10.00
Wood pulp XXX	ton	35.00	@ —
" " X	ton	25.00	@ —

MINERAL RUBBER

Genasco (factory)	ton	50.00	@52.00
Granulated M.R.	ton	33.00	@ —
Hydrocarbon, Hard	ton	29.00	@ —
Hydrocarbon, Soft	ton	29.00	@ —
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00	@52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00	@47.00
Paradura	ton	70.00	@75.00
Robertson, MR, solid	ton	25.00	@60.00
M.R. (gran)	ton	42.00	@80.00

SOFTENERS

Acids			
Acetic, 28%	cwt.	3.12	@ 3.37
Cresylic, 97%	gal.	.54	@ .60
95%		.53	@ .58
Muriatic, 20%	cwt.	.90	@ 1.00
Nitric, 36 degrees	cwt.	4.50	@ 4.75
Sulphuric, 60 degrees	ton	10.00	@11.00
66 degrees	ton	14.00	@15.00
Tartaric, crystals	lb.	.29	@ —
Alkalies			
Caustic soda, 76%	cwt.	3.20	@ —
Soda ash, 58% C.L.	cwt.	1.43	@ 1.45½
Oils			
Castor, No. 3 bbls.	lb.	.15¼	@ —
Corn, crude, bbls.	lb.	.12	@ —
refined	lb.	.13	@ —
Cottonseed, crude		.09	@ —
Glycerine, C.P. drums	lb.	.24	@ .25
Linseed, Raw C.L. bbl.	gal.	1.20	@ —
Palm, Lagos	lb.	.09½	@ —
Niger	lb.	.09	@ —
Peanut, domesticcrude	lb.	.12	@ —
Petrolatum, white		.10¾	@ .10⅞
amber		.03⅝	@ .03¾
dark amber	lb.	.03⅜	@ .03½
Pine, steam distilled	lb.	.63	@ .65
Rapeseed, refined	gal.	.95	@ .97
blown	gal.	1.10	@ —
Rosin, first rectified	gal.	.82	@ .83
second rectified	gal.	.86	@ .87
Soya Bean, crude		.13⅛	@ .13½
Tar, commercial	gal.	.30	@ .32
Resins and Pitches			
Parra M.R.	lb.	.06	@ .07
Tar Retort	bbl.	15.00	@15.50
kiln burned	bbl.	15.00	@15.50
Pitch, Burgundy	lb.	.06	@ .06½
coal tar	gal.	.05½	@ .06
pine	bbl.	6.50	@ 7.00
Rosin, grade K	bbl.	16.10	@ —
Solvents			
Alcohol denatured, No. 1 bbls.	gal.	.60½	@ .64½
Benzol, 90%	gal.	.28	@ .30
pure		.32	@ —
Carbon bisulphide	lb.	.06	@ .07
tetrachloride		.06¾	@ .07
Dimethylaniline	lb.	.32	@ .34
Motor gasoline, steel bbls.	gal.	.17	@ —
Naptha, V. M. & P.	gal.	.13¾	@ —
Toulene	gal.	.31	@ —
Turpentine, spirits	gal.	1.13	@ 1.14
wood	gal.	.95	@ .96
Waxes			
Beeswax	lb.	.55	@ .65
Carnauba, No. 1	lb.	.44	@ .45
Ceresin, white	lb.	.10	@ .11
Montan, crude	lb.	.06	@ .06½
Ozokerite, black	lb.	.24	@ .25
green		.26	@ .30
ParaffineWhite, A.M.P.	lb.	.05½	@ .05⅝
Yellow A.M.P.	lb.	.05¾	@ .05⅞
Sweet wax	lb.	.12	@ —

SUBSTITUTES

Black	lb.	.08½	@ .15
White	lb.	.10½	@ .17½
Brown	lb.	.09	@ .18
Brown factice	lb.	.10	@ .16
White factice	lb.	.10½	@ .17½

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.18	@ .20
Ethyl Chloride, Cyl.	lb.	.55	@ —
" " Drums	lb.	.45	@ —
Sulphur Chloride (drums)	lb.	.04½	@ .05
Sulphur flour Commercial bags	cwt.	1.35	@ 1.70
" bbls.	cwt.	1.70	@ —
Superfine, bags	cwt.	2.00	@ 2.40
" bbls.	cwt.	2.40	@ 2.70
100% pure, refined, bags	cwt.	2.30	@ 3.00
bbls.	cwt.	2.50	@ 3.40

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EDITOR'S REVIEW DESK

Books **Trade Catalogs** **Articles**

INDUSTRIAL CHEMISTRY. Edited by Allen Rogers, Supervisor, Industrial Chemical Engineering Course and Head of the Department of Industrial Chemistry, Pratt Institute, Brooklyn, N. Y. In Two Volumes. Volume One—Inorganic. 511 pp. and Index. D. Van Nostrand Co., 8 Warren St., New York. Cloth, $5.00.

In collaboration with many specialists, the author has compiled a book which is not only interesting to the manufacturer but to the general reader who sees romance in modern industry. In addition to chapters on general processes, water for industrial use and fuel, the book contains chapters on a number of industries in which the raw materials used, the various processes employed and the finished products are discussed.

The consulting chemical engineer has a wealth of information for ready reference in this book, as the subjects, in addition to being thoroughly covered, are augmented in many cases with a bibliography so that further study of a particular industry may be made if desired. The chapter devoted to fuel and power generation discusses the measurement of temperature, the heat of combustion, wood, coal, charcoal, coke, liquid fuel and gaseous fuel in a way which will prove of great help to engineers in rubber power plants who desire to improve their knowledge of the theories underlying combustion.

* * *

INDUSTRIAL CHEMISTRY. Edited by Allen Rogers, Supervisor, Industrial Chemical Engineering Course and Head of the Department of Industrial Chemistry, Pratt Institute, Brooklyn, N. Y. In Two Volumes. Volume Two—Organic. 732 pp. and Index. D. Van Nostrand Co., 8 Warren St., New York. Cloth, $5.00.

The author deals in this volume with the industries which depend for their existence upon raw materials of an organic nature. The most common organic chemicals are discussed and brief mention made of those which will be met most frequently in the text.

Frederic Dannerth, Consulting Chemist, Newark, N. J., is the author of the chapter on Rubber and Related Gums. This chapter starts with definitions, deals with chemical and physical properties and passes on to geography and botany. The commercial side of the rubber industry is also given brief discussion. Under the subdivision materials crude and reclaimed rubber, organic fillers, mineral fillers and textiles are treated. The author then takes up the principal processes used in the industry and briefly explains each. Other subdivisions are devoted to Products, Research Chemistry and Gums Related to Rubber.

To a person entering the rubber industry, this chapter on that great industry is of great value for in 26 pages he is given information that would be difficult to obtain in such concise and easily-understood form elsewhere. And to the specialist in the rubber factory, the chapter will also be of value because it covers all phases of the industry in a very thorough fashion.

* * *

VULCANIZATION ACCELERATORS-I. By G. S. Whitby and H. E. Simmons, McGill University, Montreal, Canada and the University of Akron, Akron, Ohio. Presented before the Division of Rubber Chemistry of the American Chemical Society at its 65th Meeting, New Haven, April 2 to 7. Published in *Industrial and Engineering Chemistry* for September.

The accelerator piperidinium, pentamethylenedithiocarbamate, has been studied with regard to the influence of variation in the proportions of sulphur and accelerator, and the proportion and character of the zinc oxide used with rubber. Zinc oxide of extremely fine particle size has a greater effect on the activity of the accelerator than has the ordinary zinc oxide, when the oxide is used in small proportions; but when used in large proportions the very fine oxide retards vulcanization if the proportion of sulphur present is only small.

The accelerating effect of piperidium pentamethylendithiocarbamate in the presence of zinc oxide is not due merely to the formation of zinc salt, the salt forming molecule of piperidine contributes considerably to the effect. The addition of a molecule of piperidine greatly enhances the accelerating effect of zinc phenylmethyldithiocarbamate and of di-thioaphthoyl disulphide. With all the ultra-accelerators studied there is evidence that the catalytically active agent is destroyed during vulcanization. One result of such destruction is that, with a given proportion of sulphur, a given proportion of accelerator cannot carry vulcanization beyond a certain point. Therefore with suitable proportions of accelerator and sulphur "fat curing" can always be obtained with accelerators powerful enough to bring about vulcanization at temperatures at which sulphur alone cannot. The accelerator di-thionaphthoyl disulphide has been closely studied in this connection.

* * *

WEARING QUALITIES OF TIRE TREADS AS INFLUENCED BY RECLAIMED RUBBER. Technologic Paper No. 294. By W. L. Holt and P. L. Wormeley, physicists. Bureau of Standards, Washington, D. C. Price five cents.

To answer the question, which recently has been often raised, as to whether an economic gain would result from the greater use of reclaimed rubber in tires, an investigation was carried out by the Bureau of Standards. Tests were conducted for the purpose of determining the influence of reclaimed rubber on the resistance to wear of tire treads, and to obtain data on the relative wear of tread compounds.

Eighty 30 x 3½ cord tires of standard 4-ply construction were used. The tread of each tire consisted of four sections, each section covering one-fourth of a tire circumference so that as the tread wore away the comparative resistance to wear of the four compounds could be determined with the knowledge that all parts of the tread had been subjected to the same load and wear.

In deciding upon the particular compounds the proposition was presented to two of the largest tire manufacturers in the country and it was left to their judgment to properly balance the formulas so as to obtain as good a tread compound as possible with the particular reclaimed rubber content. Each of the manufacturers made 40 tires, designated as No. 1 and No. 2. The composition of the No. 1 tread compounds are shown in the following table:

	Compounds, per cent by weight			
	CA	1B	1C	1D
Smoked sheet	61.1	51.30	45.925	41.175
Hexamethylene-tetramine	.4	.45	.450	.450
Sulphur	3.0	3.00	3.000	3.000
Zinc oxide	12.5	11.25	8.625	6.375
Gas black	16.0	16.00	16.000	16.000
Mineral rubber	5.0	5.00	5.000	5.000
Palm oil	2.0	3.00	3.000	3.000
Reclaimed rubber	.0	10.00	18.000	25.000

The tires were run on motors which traveled over the roads of the District of Columbia and neighboring states. Each tire was run until there was sufficient wear to make comparisons between the different sections, and in most cases the test was continued until the poorest section had worn practically through to the breaker. This usually required 7,000 miles, although on some roads the tires ran as high as 14,000 miles before a section was worn through. When the road tests had been completed the tread was stripped from each tire and a sample 10 inches long cut from the center of each of the four sections to be used as a basis for calculating the relative tread wear. The method of determining the wear was to use the ¾ by 10 inch strip and calculating the volume of rubber worn away, based on the loss in weight and the specific gravity.

Results indicated that if reclaimed rubber is used the resistance to wear is lowered roughly in proportion to the quantity used. But even when as much as 25 per cent reclaimed rubber is used a tread can still be made at least 70 per cent as good as one containing new rubber only. Accordingly the advisability of substituting reclaimed rubber for new rubber becomes a matter of the relative cost of the two materials. There are also many products in which the resistance to wear is not of first importance and in which reclaimed rubber may be used as satisfactorily as new rubber.